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The Experience of Industrial Management in the Soviet Union

PROGRESS PUBLISHERS
MOSCOW

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ОПЫТ УПРАВЛЕНИЯ ПРОМЫШЛЕННОСТЬЮ СССР

На английском языке

First printing 1975

© Издательство «Прогресс», 1974

© Translation into English. Progress Publishers 1975

Printed in the Union of Soviet Socialist Republics

76-369757

К $\frac{10804 - 811}{014(01)—75}$ 777—75

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Import. 12/4/78 $2.16

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PREFACE

A great deal of experience has been gained in managing the economy in the Soviet Union during the rather more than fifty years since the Great October Socialist Revolution in 1917. This experience is unique. [For the first time in the world a single system for managing all branches of material production in accordance with a single national economic plan has been set up.] The state lays down tasks for all sectors of the economy and allocates financial and material resources to production organisations. It devises and applies methods for boosting production by groups of workers as well as individuals by providing them with bigger material incentives to do better work and achieve greater efficiency in production.

The uniqueness of the Soviet experience of running the economy is also due to the fact that, for the first time in the world, working people in town and country as well as the working intelligentsia who have come from their midst have taken management of all sectors of the economy into their own hands.

The experience of socialist management acquired in the Soviet Union is creatively adapted and used by the other socialist countries with due regard naturally for their own particular circumstances.

Tremendous interest is shown in the Soviet system of management in many industrially developed and developing countries where attempts are made to use Soviet experience to the extent possible in different social conditions.

A number of developing countries have started on the path of non-capitalist development and for them the form and methods of managing production applied in the Soviet Union present special interest.

In this book an attempt is made to explain the essential features of the [Leninist concept of management and its importance for building socialism in the Soviet Union. Next the structure of industrial management bodies is described. In this part a brief account is given of the changes that have occurred in this structure as production has developed. The reader will learn how the structure of management bodies is planned and the different variants evaluated. Here too light is thrown on the forms and methods of worker participation in management, both on an individual basis and through mass organisations.]

Separate attention is given to the work of the manager. The central part of this chapter deals with the question of how economic decisions are taken and how their implementation in practice is organised.

Planning holds the most important place in the system of economic management in the Soviet Union. In the course of planning goals are fixed for workers in factories and farms both for the immediate future and in the long-term perspective; the direction, rates and proportions of development for production are established, and the methods of achieving the desired results are settled. In view of the great positive experience that has been accumulated in the field of planning in Soviet industry, the author has devoted a special section to describing the content and system of indicators and the methods of drawing up the plans.

The final part of the book deals with the way that implementation of the plans is organised and includes an analysis and evaluation of the level of work in different sections of industry and the use of such a management method as cost accounting that combines planning, economic control over plan implementation, and the provision of material incentives for greater efficiency in production.

The activity of industrial enterprises which form the basic production and economic units in the economy is regarded as of principal importance in this book. [The main concern of all industrial management bodies in the Soviet Union is to establish the most favourable conditions for increasing the output of goods needed by the economy and improving their quality, to make rational use of production resources, and to ensure healthy and safe working conditions. Soviet management bodies make considerable efforts to help in all ways to raise the cultural level and technical skills of working people and assist the social development of all groups of workers.

CHAPTER 1

THE LENINIST CONCEPT OF MANAGEMENT IN PRACTICE

1. THE ESSENTIAL FEATURES OF THE CONCEPT

In the very early days after the Great October Socialist Revolution (1917), the working people of the Soviet country were confronted in full force with the task of setting up a new system for running the economy. Lenin, the leader of the working people and organiser of the Soviet state, stated that the task of establishing a system for managing the country and especially its economy was of first priority. He frequently stressed that the Soviet leaders should learn to manage and that the science of management should be mastered by the very broadest masses of working people.

The general concept of managing socialist production was defined by Lenin in such works as *The Immediate Tasks of the Soviet Government; A Great Beginning; Better Fewer, But Better; Integrated Economic Plan.* The management of industry on a state-wide scale was first organised in the Soviet country. As the level of development of the country's productive forces rose, the degree of centralisation and decentralisation of management changed, as did the relationship between organisational and economic methods and between regional and sectoral management, and particular subunits in the system of industrial management bodies were set up and abolished, but the main general concept of management based on Marxist-Leninist theory was preserved throughout the whole period of socialist economic development.

The basic proposition in the Leninist concept of management is that the character and content of industrial management is determined not so much by the organisational forms and technical methods that are applied in production and management as by the socio-economic conditions of economic development and primarily by the nature of ownership of the means of production. The content, forms and methods of management depend on who owns the factories and mills, on who possesses material wealth.

The transfer of the most important means of production into general state ownership after the October Socialist Revolution (1917) made it possible for the first time in history to organise the management of the whole economy. The necessary financial and production resources for tackling strategic long-term economic tasks can be concentrated by the government on the principal trends of development in the economy. All working people have gained an interest in improving production efficiency and this has brought into existence the powerful new stimulus of production development—socialist emulation. In these conditions the experience and achievements of enterprises become available to the economy as a whole and there are no enterprise production secrets. Advanced experience is widely exchanged and made generally known.

Public ownership of the means of production is combined with a system which attaches particular means of production to particular enterprises which take full charge of them and are responsible to the state for their effective use.

Socialist ownership of the means of production has determined the way in which the whole Soviet economy is directed towards satisfying the needs of society and of each individual, and his all-round development. This kind of orientation requires an increase in the profitability of each sector of industrial production.

One of the most important tenets of the new socialist concept of industrial management is the establishment of a planned state economic system. The entire Soviet economy develops in accordance with a single state plan. The plan lays down the direction, rates of growth and proportions to be observed in developing the economy and social and cultural facilities; it fixes investments in all sectors of the economy and envisages changes in the regional location of the productive forces; and it decides what resources are needed to fulfil these assignments. State plans are drawn up on a scientific basis, and reflect progressive tendencies which help to raise production efficiency. They set out the tasks for the main, fundamental lines of work, while more particular tasks which are not of national importance are laid down by ministries and departments, associations and enterprises themselves. State plans have the force of law—their implementation is obligatory for all enterprises and organisations. The performance of enterprises, associations and ministries is judged by the extent to which they fulfil the plan.

A number of countries have recently started to draw up forecast plans of economic and technological development for a number of years ahead and it is interesting to note in this conection that long-term plans were first drawn up in the Soviet Union. The well-known state electrification plan for Russia was compiled in 1920 under Lenin's direction. This was a scientifically, technically and economically valid plan comprising input-output calculations with an exact designation of the most important construction projects and covering a period of 10-15 years. Work is currently going ahead in planning bodies, departments and research institutes in the Soviet Union on a draft plan of economic development for the period up to 1990.

In the Soviet Union five-year and annual plans are compiled on a regular basis alongside long-term perspective plans. The accuracy and general validity of these plans is vouched for by the way in which they are regularly successfully fulfilled.

A kind of hierarchy of plans exists in the Soviet Union ranging from long-term state plans, in which the major tasks of economic development are outlined for a whole number of years, to current and day-to-day plans in which the lines of development are worked out for individual sectors, associations and enterprises and in which tasks that are more partial in character are tackled. This is one form of expression for democratic centralism which is rooted in a combination of the state's leading role in economic development and broad local initiative.

Input-output is widely used in the system of national economic plans. The use of economic-mathematical methods and computing techniques helps to achieve optimisation and increase the validity of planned assignments.

The Soviet Union's planned economic system makes effective use of money-commodity relations and such economic levers as profit, prices, credit, etc.

The state, which concentrates in its hands centralised investments and the allocation of nationally important resources, implements social and economic policy through the plans, directing the economy towards solution of the main tasks which arise from the overall aims before society.

One of the most important points about the concept regarding the management of socialist production is the combination of one-man managerial responsibility with the broad participation of working people in tackling tasks connected with the development of production and the improvement of its efficiency. The principle of democratic centralism is practised at all levels of management. Large-scale machine industry can develop effiectively only on the basis of a single sense of direction, a single will. But in socialist conditions the will of the enterprise manager rests on the active support and help of all the workers employed there. The community of interests of society, groups of workers and each individual worker, given the dominance of social interests, is the reason for working people feeling a direct interest in improving work efficiency in all sectors of the economy, which is expressed in their active participation in running the economy. State plans are examined and confirmed by sessions of the USSR Supreme Soviet where the majority of deputies are workers and peasants. Local Soviets of Working People's Deputies similarly examine and confirm plans for their own areas and help to see they are fulfilled.

At every enterprise there are regular meetings of the standing production conferences which consider draft plans and their implementation. Techno-economic councils of enterprises, consisting of engineers and workers responsible for innovating new techniques, help the management to select the correct trends for developing technology and the economy. Economic analysis offices organised on a voluntary basis check on any possible reserves that may be drawn on in the production process. Similarly constituted design bureaux work on particular projects and help inventors and rationalisers in their work. Public control bodies consisting of factory and office workers check the legality of measures introduced by the administration and the effectiveness of resource use. Every enterprise director, every manager must decide such questions as the selection and placing of personnel, the allocation of housing, the use of incentive funds in consultation with the trade union organisations.

The Soviet system of economic management is based on making use on a broad scale of the working people's material and moral interest in increasing production efficiency. The main way in which consumption fund of the national income is distributed in the Soviet Union is in accordance with the amount and quality of work done. [The Soviet wage system is constructed according to this principle. As people's qualifications improve, so does their standard of living. * Various kinds of incentives make workers interested in increasing production efficiency.]

The best workers also receive a moral incentive—they are awarded Orders, medals and other marks of distinction. The most outstanding are awarded the title of Hero of Socialist Labour. The foremost enterprises are presented with Red Banners.

The use of organisational, economic and educative measures that aim at mobilising production staffs for tackling the tasks facing them is an important element in the Soviet concept of management. The socialist system of management is characterised by a profound humanity which forms one of its most important aspects. Bearing in mind Leninist principles of management, the Communist Party and the Soviet Government do tremendously creative work in improving the organisation of production, work, management and planning and bringing them into correspondence with the level of development of the productive forces.

Soviet economic management bodies establish the direction of changes in the relationship between different branches of production, once they have analysed the trends of development in production and the aims facing the country; they determine the direction of scientific and technological progress and create the conditions for implementing it quickly and effectively; they secure the conditions necessary for the uninterrupted functioning of social production and, in particular, for the priority development of the most important sectors of industry.

2. THE OBJECTIVE BASES FOR INDUSTRIAL MANAGEMENT

Management as a function of activity rests on the system of laws in accordance with which its sphere of operation develops. Consequently the scientific bases of industrial management in the Soviet Union are based on a study of the operation and use of the economic laws of socialism that determine the development of the system to be managed. The Communist Party and the Soviet Government have set the task of improving the system of planning and management, increasing the scientific content of management, and removing any possibility of chance, subjective decisions.

[Success in management can be achieved on condition that:

managers at all levels of industry and related spheres base their activity on objective, economic laws;

they tackle tasks relating to economic management on a scientific basis;

in fixing the main directions of production development, they proceed from the single system of national economic plans.]

Management of the economy in the Soviet Union is the practical outcome of the economic policy formulated by the Communist Party and the Soviet Government. It is built up on the basis of mastering the economic laws of socialism and is conducted with a view to creating the most favourable conditions for their operation.

Economic laws determine what is most important and fundamental in the development of production—its aims and trends. In keeping with the way they operate, the rate of development of production, its motive principles and structure are determined.

Economic laws possess the very same features as any other objective laws. However, in contrast to the laws of the development of nature, economic laws become apparent through the activity of people who independently of their own will are subject to their requirements.

Economic laws are inherent in the very nature of the economy. They arise from the objective tendencies of its development. They can be neither abolished nor changed. Engels wrote that "in the final analysis all economic laws are simply the expression of gradually emerging and intercrossing tendencies".* He noted that economic laws become apparent through the systematic deviations from them. Of course this is characteristic of all laws. But the realisation of economic laws through their violations is wholly characteristic of capitalist production.

Capitalist economy is characterised by the operation of those laws which give rise to anarchy of production and spontaneity of its development. And it is not here by any means a question of whether or not these laws are known. For example, the economic laws governing the development of capitalist economy were discovered by Marx himself. Nobody prohibits the theoreticians and practitioners in charge of capitalist production from studying these laws and understanding their requirements. But the crux of the matter is that private ownership of the means of production presupposes the existence and clash of interests between different entrepreneurs that are radically opposed to the interests of the working people. It is in the course of these clashes, through contradictions between the interests of different entrepreneurs, through the antagonistic contradictions between entrepreneurs and working people that the anarchy of capitalist production determined by the operation of the economic laws of capitalism becomes apparent.

In contrast to this, socialist production rests on social (state and co-operative) ownership of the means of production which determines the harmonious combination of the interests of all working people, the possibility of developing the economy in accordance with a previously worked out plan and thereby the planned way in which economic laws come into effect.

A system of state sectoral, regional and production management bodies has been set up in the Soviet Union which together with broad worker participation exercises general guidance over the development of production. These bodies determine and put into effect economic and technological policy. They are able to concentrate efforts and material and financial resources on the decisive sectors of the economy and thereby determine their development. This comprises one of the most important advantages of the socialist social and state system.

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* Karl Marx and Frederick Engels, *Letters about "Capital"*, Moscow, 1968, pp. 520-21 (in Russian).

Naturally not even under socialism do the management and planning bodies always succeed in taking full account of the objective tendencies in the development of all sectors of production. Incomplete mastery of the mechanism of the operation of the economic laws of socialism, lack of information, the complexity of the economic structure and fluctuations in the economic situation may give rise to some unjustified decisions. But the advantage which the socialist system possesses in this respect is that it has created the objective preconditions for a scientific system of management and the task confronting its various bodies is to make maximum use of these preconditions.

State ownership of the basic means of production and the endowment of the socialist state with the right to this property have transformed it from a political superstructure which is what a bourgeois state is into an integral part and most active and influential element in production relations, which of course does not deprive it of its role as a political superstructure.

"The task of administering the state, which now confronts the Soviet government, has this special feature, that, probably for the first time in the modern history of civilised nations, it deals pre-eminently with economics rather than with politics."*

A socialist state in possession of all the basic means of production has very good opportunities for influencing the country's economy. It possesses the right to lay down targets for different sections of production, to make basic capital investments, to determine the wages policy, and to allocate material resources. It also concentrates control of finance and credit. The state's purposeful activity with regard to management is determined by the fact that it does not adapt itself to objective conditions but actively influences their formation in keeping with the operation of the economic laws of socialism.

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* V. I. Lenin, *Collected Works*, Vol. 42, p. 71.

The basic economic law which determines the aim of development of socialist production and its most important directions holds the principal place among the economic laws of socialism. This aim consists in satisfying more and more fully the growing needs of the people on the basis of the all-round development of social production. The entire activity of the Communist Party and the Soviet Government whose supreme duty is to show concern for satisfying man's needs is subordinate to the requirements of this law.

The whole system of socialist economic laws affects the development of the economy in a comprehensive way. There is not one social or economic phenomenon which can be linked with the operation of any single economic law taken in isolation. The aggregate of these laws alone determines the nature of each phenomenon in economic affairs.

The action and interaction of socialist economic laws are not devoid of contradictions. True, these contradictions are not antagonistic and can be overcome at different stages of socialist construction. The task of managing the economy consists in directing the development of production with due regard for the interaction of economic laws.

Besides the general laws inherent in the socialist economy as a whole, there are a number of regularities which appear in different forms in each separate sector of the economy including industry. These regularities are determined by general economic laws and arise out of them. Among them the following may be mentioned:

a) the concentration of socialist production, i.e., the increase in the size of enterprises, workshops and production sections to an optimal level;

b) the process of combination as a vital trend for securing the comprehensive use of raw materials;

c) the specialisation of production as a process based on the social, private and individual division of labour and leading to a reduction in the range of goods produced at an individual enterprise;

d) co-operation as a form of association of a group of enterprises for producing some finished product;

e) the faster growth of labour productivity as compared with the rise in average wages;

f) a systematic rise in the cultural and technical level of personnel and greater specialisation in training a skilled labour force;

g) a rise of the technological level of production.

Each of these regularities appears in different ways at enterprises belonging to different industries.

In contrast to the general laws of economic development, these particular regularities may be considerably more numerous and may change and be replaced by new ones as production develops. However, their timely discernment and examination is vitally important for an improvement of managerial practice which must be conducted with due regard for these regularities.

The specific character of socialist production relations is one of the most important objective preconditions for a scientific system of economic management.

The basis of relationships between people during their working activity is determined by the form of ownership of the means of production. When these belong to capitalists who appropriate the surplus value, production relations take shape as antagonistic relations between hostile classes—exploiters and exploited. No talk by bourgeois theoreticians about the "democratic character" of modern capitalism, about "people's capitalism" can hide this simple truth.

In conditions of antagonistic production, management relations are also antagonistic. The manager under capitalism represents and defends the interests of the entrepreneur and carries through the aims set by the owner of the means of production. Naturally, therefore, he stands in opposition to the other employees.

The public ownership, largely ownership of the whole people, of the means of production established in socialist conditions has transformed production relations into relations of comradeship, friendship, and unity of a collective of people who benefit equally from the results of collective work, based on the principle of distribution according to the amount and quality of work done.

Production relations in turn determine the nature of management; the relationships between managers and subordinates; relationships between the state, enterprises and employees, etc. In the final analysis all these relationships are determined by the form of ownership of the means of production and are derived from basic production relations.

The work of economic management is productive work, though this does not in any way mean that it is identical to work done in the immediate sphere of production. They are different spheres in which human labour is put to use. The difference between them is that the object of labour for a worker directly employed in the sphere of production are raw materials or semi-finished products on which he works with the help of machines and other tools. A member of the managerial staff on the other hand uses information as his object of labour and his instructions are passed on through his executors to machines.

Under socialism management relations are relations among a community of people who are equally interested in developing production. In the Soviet Union each object of management—executor—is at the same time a subject since he takes an active part in management.

The scientific nature of management consists not only in a valid determination of the general directions for the development of the unit being managed, which is linked up with the operation of general economic laws, but also in the choice of the correct decisions in current management for each particular period of time. This means that one of the scientific foundations for management is a proper regard for real situation and the objective trends of development both in the economy as a whole and in its individual sectors.

"Marxism requires of us," Lenin wrote, "a strictly exact and objectively verifiable analysis of the concrete features peculiar to each historical situation. We Bolsheviks have always tried to meet this requirement, which is absolutely essential for giving a scientific foundation to policy."*

A definite social system is governed by the same economic laws, but as the system develops the relationships between them, their sphere of operation and the forms in which they appear, change. The task of economic management is, as it happens, to define the lines of its further development with due regard for the specific features of the time on the basis of a deep study of the conditions of development of production in the past and currently.

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* V. I. Lenin, *Collected Works,* Vol. 24, p. 43.

Economic management cannot fail to take into account the special features present at any given time. It is this which to a considerable extent determines changes in the organisational forms and methods of managing industry in the Soviet Union.

Lenin said that "there is much that is similar, basically similar, in the methods by which the affairs of different and diverse factories, institutions, departments, etc., are conducted".* This determines the uniformity of principles and methods of economic management in different industries and sections of industry. But this does not do away with the necessity of taking into account those specific features which are due to the character of the different branches of industry, and to the location of industries which affect the way particular tasks are tackled.

Lenin's remark about the similar nature of management in different organisations should be regarded as referring to principles and methods. As regards organisational decisions, these should necessarily be based on an analysis and due account of the specific conditions existing in the unit under management.

The specificity of the actual conditions depends on the continuity of production, its proximity to the natural resources, level of specialisation, technological features, structure of costs, and so on.

The whole question of classifying units in the managed system is closely tied up with such an account of actual conditions. Naturally one cannot start off on the job of working out organisational forms and managerial methods for each individual enterprise and workshop on the basis of the special features of production. This would be quite unjustified and would give rise to the need to work out management and planning problems on an individual basis which would make this work extraordinarily expensive and complex. The best way is to establish a system for classifying enterprises which allows typical solutions to be drawn up that can be applied to each group in the classification and to adapt these typical solutions to the conditions obtaining at individual enterprises.

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* V. I. Lenin, *Collected Works*, Vol. 33, p. 42.

Enterprises are classified with the aim of defining the general direction and solution of managerial tasks related to organising the production process for similar types of enterprise and of working out general methods for tackling economic questions.

In classifying enterprises, it should be borne in mind that it is by no means always easy to attribute one or another enterprise to a particular group. It quite often happens that different divisions of the same enterprise gravitate towards different groups. For example, the blast furnace shop is more specialised than the steel-smelting and especially the rolling shop. For this reason the enterprise is assigned to one or other group according to the attributes of its basic, leading divisions which determine its specialisation and general organisational features.

Classification is used in tackling many questions relating to the management, planning and organisation of enterprise operations. Thus the size of an enterprise affects the structure of the managerial staff; the degree of specialisation and the serial production have an effect on the detailed work on technological processes, on the use of special equipment, instruments and other devices, on the scale of application of technically validated output-standard, etc. For example, the State Committee of the USSR Council of Ministers for Labour and Wages classified enterprises with a view to establishing typical staff lists of managerial and other non-production personnel for each group. Some sectoral institutes carry out classification to draw up standrad documentation, technological processes, etc., for similar-type enterprises.

An enterprise's most typical distinguishing features are its size, the complexity of production, and working conditions characterised by the system of indicators established for each branch of industry. Such indicators in the coal and the ferrous and non-ferrous metal industries are the volume of production, its character, and working conditions; in engineering they are the type of production and complexity of output. Enterprises in other industries have their own particular kind of indicators.

Relations between enterprises, branches of industry and different regions of the country are becoming more complex and diverse as specialisation and co-operation develop.

The modern scientific and technological revolution is making an enormous impact on the development of production and its management. It entails qualitative changes in the sources of energy, in machinery and mechanisms and the character of technological processes, in the organisation of production, work and management; it means a rise in the cultural level and technical skills of personnel and the obliteration in the Soviet Union of all distinctions between mental and manual labour. A process of continuous and considerable intensification of production and of increasing its efficiency is in operation. Science is becoming society's direct productive force. All these trends increase management's responsibility, expand the volume of work it has to do, and make it more complex.

In recent years a whole number of branches of science have started research into management problems. Cybernetics, systems analysis, the theory of automated control all play their part in developing management schemes. A whole series of concepts worked out in this connection, such as for example control system, feedback, feeds, control circuits, have acquired a definite methodological meaning.

Cybernetics holds a special place among the sciences dealing with management problems. It forms the theoretical basis for the automation of production. It has introduced into the theory of management a systems approach which allows an evaluation to be made of each unit as such, from the viewpoint of the whole and of the implementation of tasks confronting this whole, as well as an examination of all phenomena in their interdependence.

The application of cybernetics to managing social processes makes it easier to establish a quantitative estimate of the interrelationship and interdependence of different phenomena and of the effectiveness of managerial decisions, especially in connection with the use of mathematical methods.

Information theory pivoted on the method of direct and feedback transmission is a major branch of cybernetics widely used in economic management. This method is used as a basis for developing an entire system of information—for defining its content, frequency of collection and means of transmitting information, its addressing and methods of processing and reaction to it. Cybernetics is widely used in working out the organisational structures of control systems.

The main criterion for evaluating the managerial concept is whether it improves the efficiency of the managed system and further develops the productive forces. Judging by Soviet experience, it is obvious that the effectiveness with which the socialist concept of management is implemented is indisputable.

It is known that the working class and working peasantry who accomplished the October Socialist Revolution (1917) took over a poverty-stricken, devastated and extremely backward country; at the present time the Soviet Union holds second place in the world for volume of industrial output. The First World War, the armed intervention and the Civil War imposed on Soviet Russia, and then the attack by nazi Germany and the devastating Second World War brought unimaginable hardships to the Soviet Union. It is sufficient to recall that during the Second World War the Soviet people lost more than 20 million people in the very fullness of life. The nazi invaders totally or partially destroyed 1,710 towns and industrial townships, and more than 70,000 villages, and destroyed 31,850 industrial enterprises. Nearly 20 years of socialist development in the Soviet Union have been taken up by war and subsequent economic rehabilitation. Yet even so industrial production in the Soviet Union has taken vast strides, overtaking many other countries. High rates of growth have always been recorded throughout the years of peaceful development.

What has been the deciding factor in the Soviet Union's industrial development? Of course, the Soviet Union is exceptionally rich in natural resources. But these were available before the revolution. The main factor determining the new potential in the growth of production and scientific and technological development is the socialist structure of state and society and its system of planned management.

CHAPTER 2

THE STRUCTURE OF MANAGEMENT IN SOVIET INDUSTRY

1. DEVELOPMENT OF THE STRUCTURE OF MANAGEMENT BODIES IN THE SOVIET UNION

After the Great October Socialist Revolution of 1917 in Russia, power passed into the hands of the working class and peasantry. For a time, factories and mills remained the property of the former capitalist owners. However such a situation could not last for long. Enterprise owners sabotaged the measures being carried out by the new Soviet Government. In order to defend the working people's interests, exercise control over the activity of the capitalist entrepreneurs, and check on their fulfilment of directives issued by the Soviet Government, workers' control commissions were set up at every enterpise. They controlled production, the distribution and sale of output, the organisation of wages and other aspects touching on relations between entrepreneurs and the working people and governmental bodies.

When Lenin was having a look at the development prospects of the new social system, he observed that the advanced state structure being established should be based on the most advanced form of ownership of the means of production. The time had come to expropriate the expropriators and in the first place to nationalise the banks and heavy industry.

Even as early as 1917 a large number of enterprises were nationalised and became public property under the immediate management of representatives of the workers' and peasants' state. The need arose to establish a body which would direct the activity of the whole of industry from a single centre in conformity with the interests of the economy.

The need for and feasibility of state management of industry was determined by the new form of ownership of the means of production which arose after the nationalisation of industry had been carried out. The transfer of enterprises into public (state) ownership created the conditions in which each enterprise became an integral, organic part of the country's entire economy. Such a system could not develop without a single system of management being introduced.

The first organisational form of industrial management which the Soviet state set up in 1917 was the Supreme Economic Council and its local bodies. The SEC was a strictly centralised body which concentrated in its hands the entire management of industry. Its chief administrative departments, or *glavki,* each responsible for a different branch of industry, were a central link in the running of industry.

The Soviet economy was at that time in a state of extreme disruption. As a result of the destructive First World War from 1914-18 and the subsequent Civil War and armed intervention by a number of capitalist countries, substantial sections of industry, transport and agriculture had been destroyed. Only an insignificant number of enterprises were operating. The highly centralised system of management was dictated by the necessity to meet the needs of the front and the civilian population in such extremely complex circumstances.

Even at that time Lenin pointed out the need to draw up a general plan of development for the economy for many years ahead and took personal charge of the work on compiling the General Plan for the Electrification of Russia, widely known as the GOELRO plan. In April 1920 the Council of Labour and Defence was formed which was entrusted with the task of regulating the country's economic affairs. In February 1921 the State Planning Commission, Gosplan, was established.

After the end of the civil war, production had to be started up again in the shortest time possible and for this purpose a New Economic Policy was put into effect. Industry was put on a cost-accounting basis,* the opportunities for initiative and independent work by middle and lower levels of management were extended, and industrial concentration increased, while at the same time small-scale individual production developed. In these conditions enterprises were joined together in trusts, many of which were placed under local economic councils. The SEC took over the job of management only in the case of the biggest enterprises. Syndicates were established in that same period to deal with questions regarding supplies, distribution and sales, and financial accounts between enterprises.

By decision of the 15th Communist Party Conference in November 1926, the system of industrial management was restructured in the direction of centralised planning and the granting of wider powers of operational management to the localities. The rights of enterprises were substantially expanded.

Major changes were made in the system of management as a result of the Party Central Committee's resolution dated 5 December 1929, "On the Reorganisation of Industrial Management", the main clauses of which are still operative. It laid down that the basic unit of organisation should be the industrial enterprise, which became an independent body functioning on an economic-accounting basis.

The range of functions carried out by trusts was reduced and they were converted into technical management bodies for enterprises, syndicates were abolished, and associations were set up on the basis of the *glavki* which were directly subordinate to the SEC and were responsible for managing all aspects of enterprise activity.

In 1932 three people's commissariats were organised on the basis of the SEC—for Heavy Industry, Light Industry, and the Timber Industry. People's commissariats were set up in the Union republics for the purpose of managing local industry. Industry-based *glavki* were established within each people's commissariat and the associations were abolished. Large enterprises came directly under these *glavki,* while the very largest were put under the people's commissariats. This reorganisation was prompted by the growing volume of production in industry as a result of the commissioning of a large number of new enterprises.

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* Cost (economic) accounting is a method of planned economy at socialist enterprises based on measuring the costs and outcome of their operations in monetary form, on covering their costs from their own funds and ensuring their profitability, and on the material incentives and responsibility of the enterprise and its work-force.

A very important step was taken to strengthen the management of industrial enterprises when primary Party organisations were given the right to exercise control over the work of the administration. In this way conditions were created for the large-scale development of criticism and especially criticism from below, the leading role of Communists at the point of production was enhanced, and primary Party organisations were strengthened.

The 18th Party Conference in February 1941 set new tasks before industry in raising the quality of work which required industrial workers to implement measures for improving the enterprise economy.

The new conditions of work in industry and the new tasks which arose in the course of the Second World War demanded that changes be made in the methods of running industry. Many enterprises were relocated in eastern parts of the country. The specialisation of enterprises was altered. Most types of goods needed at the front were produced in mass quantities. Changes were made in the ties established between co-operating enterprises. The time taken in mastering a new type of production was drastically cut, while there was a heightened sense of responsibility for completing the daily production schedule established in many enterprises. Industrial management bodies were required to work with a special degree of efficiency, at a fast pace, and flexibly.

In the postwar period, in March 1946, the people's commissariats were reorganised into ministries, while the Council of People's Commissars (Sovnarkom) became the Council of Ministers. In the early years after the war, partial changes were made in the composition of ministries—certain ministries were abolished (the Armaments Ministry), some were combined (the two ministries responsible for the food, drink and tobacco industries), but the basic system of management remained unchanged for a number of years.

The splitting up of the managerial function among a number of ministries each responsible for a particular sector of the economy was necessay because of the further substantial increase in the scale of production, and the introduction of a great number of new, more complex types of goods. Inter-enterprise ties had expanded and it was the job of the ministries to organise and develop them. The country started on the path of technological progress whose direction was also worked out by the ministries. The various sectors began increasingly to acquire theire own particular features and this too had to be taken into consideration in the course of management.

By the beginning of 1957 there were 37 Union and Union-Republican ministries responsible for industry and construction. Besides these, there were Republican ministries which had no counterpart at Union level: these were the ministries for local industry and for the fuel industry of Union and Autonomous Republics.

A considerable number of enterprises, mainly those catering for the needs of the population in particular regions and towns were managed by regional, territorial and town Soviets through their appropriate departments.

Some small factories and workshops catering for the everyday needs of the local inhabitants and which consumed mainly local materials or wastes from heavy industry came under the executive committees of district Soviets.

In 1957 the management of the economy was reorganised on a different footing. In the place of ministries regional economic councils (*sovnarkhozy*) were set up which took over the management of nearly all enterprises located in their area. This system of management had a number of positive features but it also had the result that the various sectors of the economy, each of which had its own separate technical-production and economic identity, kind of dissolved into the different economic regions. Departure from the sectoral principle led to a reduction in the level of management in the different sectors, destroyed the uniformity of technological policy, dispersed qualified managerial staffs, forfeited efficiency in management and gave rise to a multilevel managerial system. All this had an adverse effect on the work of industry. It also made it necessary to carry through a radical restructuring of industrial management which was done in accordance with decisions taken at the September 1965 Plenary Meeting of the CPSU Central Committee. The sectoral system of management was re-introduced.

The *sectoral system of management* created more favourable conditions for implementing technical progress, assessing advanced production experience and making it more generally known, developing and applying economic-technical standards for each and every sector, conducting interfactory techno-economic and comparative analysis and doing a lot of other work on raising the level of economic management in production.

Establishment of this sectoral system does not imply any rejection of regional management. The *sectoral-and-regional principle* forms the basis for establishing managerial bodies in industry. Only a correct combination of the sectoral and the regional principles can produce the desired effect.

A complex programme for further improving the system of management in industrial production was worked out at the Soviet Communist Party's 24th Congress. It includes the development of planning in the direction of increasing the role of perspective plans and extending the scientific validity and balance of all plans. The Congress resolutions pointed to the necessity to reduce the number of linkages in the structure of management and switch to a two- or three-tier system. The Congress set the task of further developing economic methods of management and especially economic accounting. In accordance with its decisions, a great deal of work is being done to establish an automated system of management and to make wide-scale use of economic-mathematical methods which make it possible to increase the optimality of economic decisions, improve the efficiency of management and cut management costs. The Congress also turned its attention to the need to further improve the forms and methods of worker participation in management.

As a development of Congress decisions, the Central Committee of the Soviet Communist Party and the USSR Council of Ministers adopted a joint resolution which set the task of working out general schemes of industrial management as a whole and in each particular sector, reducing the number of linkages in the managerial set-up and establishing associations which should become the basic economic unit in industry.

The change in the structure of industrial management bodies described above was a natural development. First of all the Soviet Union was the first, and for many years the only, country in which the management of such a major economy was carried out in accordance with a single state plan. Nowhere previously had state management of industry, transport and other sectors of the economy been undertaken on such a vast scale. For the first time in the world, management was practised in the conditions of a socialist social and state system, so it was necessary to seek out new forms and methods of management and organisational structure. Moreover, the country's industry was developing at a very fast pace and was becoming more and more complex and dynamic. The system for managing industry was adjusted accordingly. It has been proved both in theory and practice that the dynamic growth of production inevitably leads to changes in the system of management without which production cannot function normally.

2. THE PRESENT STRUCTURE OF INDUSTRIAL MANAGEMENT BODIES IN THE SOVIET UNION. GENERAL ECONOMIC MANAGEMENT BODIES IN INDUSTRY

Industrial economic management bodies are responsible for organising and directing the activity of all groups of workers employed in the production of high-quality goods needed by the economy, through the most rational use of resources.

Complex modern production can only be managed as a result of joint work by many different departments which specialise in carrying out different managerial functions. One part of the managerial staff is engaged in planning, another is charged with administration, while some of those involved carry out particular management functions. The most obvious division existing at the present time is into management bodies which carry out general, technical, economic, or operational functions or are responsible for external economic relations, work and general welfare. These functions are carried out at all rungs of the hierarchical ladder of management from the economy as a whole to individual enterprises and production shops.

Industrial management presents a complex and varied field of activity, which is carried on by a whole number of different bodies, each of which manages a particular part of industry or performs a certain definite function in the system of management.

The USSR Council of Ministers is responsible for the general management of industry, as it is for the economy as a whole.

Various State Committees attached to this Council take part and help in working out particular problems connected with different managerial functions.

The State Planning Committee of the USSR Council of Ministers (Gosplan) is responsible for drawing up long-term and current economic plans, checks on their fulfilment, and suggests measures to the Government for improving plan implementation and increasing the efficiency of social production.

The State Committee for Science and Technology is responsible, together with the USSR Academy of Sciences, for scientific and technological progress, lays down the main lines of development for science and technology, helps develop them and sees that the outcome of scientific research and development in production is applied more effectively.

The State Committee for Construction draws up and organises the implementation of technical and economic policy in the construction field.

The State Committee for Material and Technical Equipment Supplies heads the system of organisations which are responsible for allocating producer goods and organising the delivery of materials and technical equipment to industrial and building organisations.

The State Committee for Labour and Wages tackles problems regarding the organisation of work and the system of material incentives.

The Committee for Prices is in charge of state policy on prices.

The Central Statistical Agency (CSA) which is also attached to the USSR Council of Ministers organises the country's system of national accounts and analyses data regarding the development of all sectors of the economy and of social and cultural facilities too.

These State Committees are part of the government and carry out work on problems which fall within their range of functions.

In practice these Committees cover the main functions of management—economic, technical, economic relations, organisation of work, price formation and national accounting.

Over and above these functions, economic management comprises the function of operational management which does not have its own particular state organisation since operational management is largely carried on at lower levels of management.

Industrial ministries established in accordance with the sectoral principle exercise direct managerial authority over particular branches of industry.

It should be realised that each branch forms a basic economic and technical part of industry. It is characterised by the uniformity of the raw materials it uses, the plant and machinery, the composition of its labour force with regard to skills, the nature of the production process, and the final destination of its output. It is naturally much better to have skilled management of the technology and economics of production organised along sectoral lines. The sectoral structure of industrial management bodies helps to ensure that specialisation of production is correctly implemented, that a general technical and economic policy is worked out and applied for each sector, that the standardisation of output and components is put into effect on the production lines, that technological processes are also standardised and other tasks affecting the development of the sector are tackled properly. The sectoral system of management helps to bring sectoral research and project-planning organisations close to production and in consequence to improve the level of work on scientific research and project work and ensure that it is quickly applied.

At the same time there are a number of matters which cannot be solved along purely sectoral lines, such, for example, as problems regarding the regional organisation of production—the complex development of economic regions, the use of power, labour and water resources, and many others. These questions are tackled by regional organisations—by the governments of Union Republics and their respective bodies. That explains why the authorities took a special decision to extend the rights of Union Republics when they established sectoral ministries.

The general structure of industrial economic management bodies can be presented as follows.

Ministries which are the basic industrial management body are responsible for enterprises in a particular branch of industry and for the appropriate research and project-planning organisations. They are in charge of planning and the management of production and take decisions on questions of technical policy, material and technical equipment supplies, financing, work and wages. This facilitates the production and economic activity of enterprises, the introduction of new technology, and the development and implementation of a uniform technical and economic policy for enterprises in that particular branch of industry.

At the present moment three types of ministry function in industry: Union, Union-Republican and Republican.

Union ministries are set for branches of the heavy engineering industry since they especially need single technical and economic management on a national scale.

Union-Republican ministries have authority over enterprises in those industries which are largely important for the development of the Republic's own economy and over enterprises which exist in preponderant numbers within the area of a particular Republic. These enterprises come under the ministries of the appropriate republics. Industries for which Union-Republican ministries are responsible include mining industries, iron and steel, light, food, dairy, chemical, building materials and other industries.

Enterprises of purely local significance catering for the needs of the inhabitants of a particular area come under Republican ministries and their departments in regions, territories and Autonomous Republics.

In some industrial ministries, chief industrial production administrative departments (*glavki*), which are gradually changing into all-Union or Republican economic associations, undertake direct management of certain subsectors of industry. In addition, the ministries have functional departments (technical, economic, planning, etc.) which help the ministry to tackle particular tasks.

Further development of the sectoral system of industrial management is directed towards reducing the number of levels at which managerial decisions are made, towards greater coverage by each ministry of a particular branch of industry, and towards extending the economic-accounting basis of its operations. The Soviet Communist Party's 24th Congress in 1971 decided: "A changeover to a two- and three-link system of management in industry shall be effected. The responsibility of ministries for the full satisfaction of society's requirements for the products of their respective sectors, for the technological level and quality of the products shall be decisively raised. Measures shall be carried out to improve the work of the ministries as the highest link in sectoral management".*

The enterprise is the main primary production unit in industry. It forms a technical-production, economic and organisational unit. It is also a complex, probabilistic technical, economic and social system.

Despite the importance of enterprise activity in developing industry, many of the problems involved in intensifying production can be resolved at a higher level of management.

The integration of production finds one of its main forms of expression in the setting up of associations of enterprises according to their technological and production similarity and their spatial proximity. An association is at one and the same time an economic-production organisation and a form of management. It joins together independent enterprises or plants (branches) connected by a system of co-operation, by the vertical processing of raw materials or closely connected in other ways in the production process. Each association studies the demand for its output in the economy, organises and carries on independent applied research, designs and promotes new goods, organises material and technical equipment supplies and works out future ideas for the development of its subsector. The specialisation of production is deepened within the association and its concentration strengthened. All this considerably increases the efficiency of production.

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* *24th Congress of the CPSU*, Moscow, 1971, p. 319.

Depending on the nature of the organisations included in the association, the following variety of types is possible: production, research-and-production, project-planning-and-production, trade-and-industrial, agricultural-and-industrial, etc. Associations may be organised on an industry or inter-industry basis. They may include enterprises which fully preserve their independence or enterprises which have been turned into subsidiaries.

These associations have fully proved themselves. While maintaining the policy of the all-round development and establishment of such associations, strict rules exist regarding the validity, from the production and economic point of view and in the light of its efficiency, of establishing an association and the inclusion in it of an organisation.

3. THE PRINCIPAL DEPARTMENTS OF INDUSTRIAL MANAGEMENT. THE GENERAL MANAGEMENT OF INDUSTRY AND ITS DIFFERENT BRANCHES

The system of industrial management bodies is fairly complex. Each body comprises a considerable number of different departments which perform different tasks in the management of modern complex production. The main areas of work are as follows: overall management of industry and its different branches; the provision of technical, operational, and economic services; and the field of external economic relations, work and general welfare.

The overall direction of industrial production, enterprises and their units is exercised by ministries responsible for a particular industry, heads of chief administrative departments in ministries, general directors of associations, enterprise directors, and production section heads and foremen.

Combined works and trusts which are another type of association also exist in certain branches of industry, and are headed by directors.

Ministers are members of the government responsible for the management of a particular branch of industry. They are vested with great powers enabling them to take any necessary measures to develop their sector of industry within the framework laid down by the state plan. They are responsible for development of their sector and fulfilment of the state plan as well as for the correctness of the technical and economic policy adopted in that sector. Ministers may transfer some of their powers to the heads of the chief industrial administrative departments in ministries, those in charge of certain subbranches, general directors of associations or directors of combined works, trusts and other organisations.

Now that the powers of enterprises have been extended, ministries no longer concern themselves with their day-to-day management but concentrate their attention on those areas of activity which lie outside the competence of individual enterprises and associations.

Directors of state enterprises organised on an independent economic-accounting basis form the next link in the system of management. They are trusted managers bearing sole responsibility to the Soviet state and responsible for the results of the enterprise's entire operations. They decide what ways and methods should be adopted in carrying out the enterprise's planning assignments, make certain the necessary material and technical equipment resources are obtained, organise production work, see to it that high-quality output is produced over the required range of goods, and give the lead in work on plan compilation and the introduction of new equipment and technology. Directors are also responsible for seeing that the enterprise meets its obligations to the state budget and the banks.

Constant attention is paid at socialist enterprises to improving working conditions and wages, ensuring safety and health at work, raising skills and improving the workers' living conditions and their social and cultural amenities. In this way better conditions are created for developing the workers' creative initiative in improving production, which is why each enterprise director pays a great deal of attention to these matters.

In carrying out his duties, every director relies on the help of workers and mass organisations in his enterprise, bringing them into discussion on draft plans and other important questions affecting production, and also counts on their help in implementing the resulting decisions. He settles many questions either jointly or in agreement with the trade unions.

Directors are also responsible for approving the enterprise's technical, output and financial plan on the basis of targets set by higher-level organisations. Within limits laid down by law, they can make changes in their plans and accept orders from other organisations. In agreement with the customer they fix prices for those goods whose price has not already been fixed by superior bodies. They also have the right to make changes in the technological processes for many types of goods, to dispose of surplus materials and plant according to established procedures, and to lay down the structure and staffing of production shops and sections. Under their leadership monthly plans for construction work are compiled on the basis of perspective and annual plans laid down by superior bodies. They have the right to introduce changes in the list* of construction projects so long as they do not alter the total volume of construction or the commissioning dates for new producion capacities; to decide on the construction of below-limit** projects; and to lay down and, if necessary, change planning tasks and financial allocations for the construction of particular projects.

In the interests of promoting technical progress in the enterprise, directors are also able to approve the accounts of the financial budget permitting expenditure on implementing measures to introduce new techniques and to ensure their recoupability within the limits set on total expenditure by law. Directors have the right to acquire special machinery, instruments and materials for the conduct of research and experimental-design work.

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* A list of construction work is a list of projects under construction with an indication of their purpose, cost and commissioning date.

** In the Soviet Union a limit is laid down regarding the costs of constructing industrial projects, above which only top-level bodies can take any decision and below which it lies within the competence of an enterprise director to do so.

Medium- and large-scale enterprises with a complex production process are divided up into different shops. In large measure the successful work of the whole enterprise depends on the quality of the work done by the section's management bodies which are under shop heads.

Managers (general directors) of production associations incorporating branch enterprises which do not have legal status exercise the same powers and do the same work as directors of independent enterprises organised on an economic-accounting basis.

The managers (general directors) of all-Union or Republican associations organised on an economic-accounting basis perform the same functions as the chief administrative departments in whose place they have been established. But, unlike them, the associations are economic-accounting organisations which carry out many of the managerial functions which cannot conveniently be entrusted to individual enterprises in modern conditions.

Advanced practice has shown that skilled management at shop level is most effective in large ones where new techniques and advanced production organisation can be introduced more successfully and used more efficiently. Increase in shop size makes it possible to release some administrative and managerial staff and factory floor space and thus reduce the absolute and relative number of workers engaged in management and other ancillary services. It helps ensure more skilled management of shops and sections, improve the organisation of work and production, reduce the distance over which components have to be transported, etc.

Shop management is in the hands of a head who is directly subordinate to the enterprise director. Experience has shown that attempts to place shop heads under various deputies and assistants to the director diminish their role and importance, and change them from managers into simple operatives. An exception may be made in the case of heads of repair, tools and certain other shops which can be incorporated in the system of appropriate departments in the enterprise management.

Shop heads have the right to hire-and-fire, to provide incentives and impose penalties on shop workers, to fix a worker's skill rating; they are also responsible for seeing that the section plan is fulfilled in all particulars, especially in the case of shops organised on an economic-accounting basis, and for directing the work of the entire shop's staff along the lines indicated in the state plan.

The success of enterprises and production shops depends in the final analysis on the work of production sections. For this reason one of the most important jobs facing any management body is to ensure that all the enterprise's sections headed by foremen work at a high level of productivity.

Technical Management Bodies in Industry

The structure and organisation of technical management bodies have considerable effect on the speed and efficiency with which scientific and technological progress is implemented.

The technical management of production is a complex, multifaceted process. It has to select the most progressive prototypes of manufactured goods and thereby help improve the reliability and durability of an article and its attractiveness to consumers, while at the same time securing the right conditions for improving the enterprise's economic performance. The conduct of research work, the planning of new enterprises and production shops and the reconstruction of existing ones all fall within its sphere of work.

Choice of the most progressive technology has an important effect on the quality of output, the use of raw and other industrial materials, and the labour-intensity of production, that is, on the most vital aspects of enterprise operation. The level of mechanisation in the different sectors of production and the character and progressive nature of the machinery, tools and accessories used also depend to a great extent on the work of technical management bodies. These are responsible for standardising products and components, and for ensuring that industry as a whole and its different branches reach a high scientific and technical level of work.

Special departments of the technical management bodies are in charge of organising the scheduled maintenance of machinery with the aim of keeping it in working order. They plan for the modernisation of machinery and see that it is carried out. There is also a power supply department which sees that the enterprise is supplied with all types of energy and which is responsible for drawing up and implementing measures for saving power.

Technical control over the quality of output is a vital link in technical management. Quality control entails checking both the planning and the manufacturing stages of output, making sure that technological standards are observed and drawing up measures to improve the quality of output.

This entire work is organised and put into effect by a whole system of technical management bodies. The ministry exercises the overall technical management of the particular branch of industry through its technical office which is stafed with highly-competent experts. It also decides on the direction of technical progress in its sector and sees that it is undertaken.

Industrial research and design bodies work under the direction of a ministry's technical management department in carrying out research appropriate to that particular branch of industry, designing the construction of new and the reconstruction of existing factories, designing new output, and drawing up many of the rates to be used in that branch.

More detailed technical matters connected with the work of particular subbranches of industry covered by production associations are worked out by their technical offices and the research and design organisations which come under them.

These measures to strengthen specialised technical direction within each branch of industry are combined with measures to bring technical management bodies closer to production. Many industrial research institutes and project-planning organisations are placed under economic and production associations, while some are directly under enterprises, but this does not mean that they do not serve the whole branch of industry in their particular field since they are the principal organisations in their area of specialisation.

Specialised experimental plants have been set up and are being extended which are freed from the task of having to meet current production orders and are geared to doing experimental work at the request of inventors and designers. Their job is to hand over sufficiently tested and tried designs for mass production.

When technical management bodies are organised in this way, it becomes easier to draw up a common technical policy for each branch of industry, and this can be done by highly skilled experts grouped together in industrial institutes and project-planning organisations. Work on establishing standards, on classifying technological processes by types and drawing rates is centralised in those organisations carrying out project-planning work. The most important technical and technological rates used in enterprises are fixed for the branch as a whole or for associations. In work of this kind it is especially important that information is received on a regular basis about the latest findings in science and technology. A system of technical management such as the one described above secures the conditions necessary for bringing to light and generalising advanced production experiences and separate management of current production and work related to the development of new technology.

One of the effective forms of organising research work in industry is the establishment within associations or at large enterprises of branches of sectoral research institutes. The close ties of the branches with their institutes ensure better dovetailing of their work and precludes duplication of efforts and lack of co-ordination.

The sectoral organisation of the technical inspection service exerts a great influence on improving the quality of goods. Alongside the technical inspection staff of an enterprise, every industrial ministry has a technical inspection division which organises the development of standards, formulates technical specifications of goods and arranges selective inspections of the quality of the output.

The State Standards Committee of the USSR Council of Ministers verifies the quality of goods and the organisation of quality inspection in the various ministries. Thus, a harmonious system of agencies has been set up which helps to improve the quality of output and prevents low-quality goods from getting to consumers.

At enterprises and in associations technical guidance is exercised by the chief engineer who is the first deputy director. The technical services of an enterprise include designing and technological departments, laboratories, the office of the chief mechanic, the power supply department and an experimental shop. Linked up with the technical services is the technical inspection department which works under the direct guidance of the enterprise's director or the association's head.

The chief engineer is responsible for the work of production shops and is in charge of research done at the enterprise. He decides not only current but also long-term questions regarding ways of developing the organisation and techniques of production. He keeps an eye on the work of bodies responsible for training new workers and raising the skill of the labour force, takes practical measures to improve the quality of output and reduce the number of rejects, and sees to it that technological rates are observed at the enterprise.

One of the chief engineer's most important jobs is to stimulate a flow of rationalisation proposals by workers at the enterprise. With this aim in mind, he puts up for discussion by the workers different variant designs and brings to their notice any complaints made by customers or any reports of defects noticed in the course of production. He also puts the designs of technological processes and suggestions for altering them for discussion.

The chief engineer helps anyone with ideas about rationalising production to formulate his proposal in a technically valid form and often helps set up all-round teams of people interested in rationalisation measures.

Naturally he faces many difficulties in combining work on implementing technical progress with his responsibilities for current production. This often requires immediate intervention and diverts his attention away from many long-term problems.

There is a trend in some associations and enterprises to free the chief engineer from work connected with the current oversight of production. In order to do this, the production department at these enterprises and associations is turned into an office of production manager who has the powers of a deputy director and comes immediately under the director, bypassing the chief engineer. In this way the latter is able to concentrate his attention on the serious problems of technical management.

Curent Management of Production

The normal course of production is sustained by the whole system of industrial management but a special place belongs to operational management.

The main task confronting operational management bodies is to ensure a steady rhythm of work, to see that the plan schedule is followed, to forestall any undesirable departures from it and, if they occur, to correct them speedily. In order to achieve this, operational management bodies draw up operational schedules detailing the work of enterprises, production shops and sections, carry out the operational preparations for production, that is, make sure that the factory is supplied with the necessary materials, semi-finished goods, tools, etc., and keep a check on the servicing of machinery and implementation of the production schedule.

The activities of operational management are usually organised in a centralised way. Instructions issued by the head of the dispatch department in the ministry and the enterprise's own chief dispatch department head regarding the order, priority and time limits for executing some or other orders are binding on all enterprises and sections of production.

Operational management bodies are responsible together with the technical departments for drawing up rates affecting the time-table of production (length of the production cycle, size of a particular batch of goods, limit on the amount of work-in-progress). These rates can be drawn up qualitatively, without involving an excessive amount of work, only on the basis of typical rates prepared by industrial project-planning organisations.

Operational management's main task is to react speedily and appropriately to the production process. Its rational organisation is based on observance of the following main principles:

1. *The Principle of Maintaining a Smooth Flow of Production.* This means that any snags which occur in the course of production must be averted and not simply corrected after they have happened. Practical implementation of this principle requires enterprises producing a stable range of goods to set up permanent stocks of work-in-progress at all major

stages of the production process, and dispatch departments fixing their attention on maintaining stocks at the required level. Reserves of production capacity should be established in sections which are not directly engaged in processing the objects of labour (raw materials, semi-finished goods), for example in the power supply.

In the case of small-batch production where it is not possible to set up regular stocks of work-in-progress, forward-planning schedules should be drawn up so as to ensure the necessary degree of reliability in the work of subcontracting production sections and shops.

The principle of maintaining a smooth flow of production also means that operational measures must be taken to ensure adequate preparation for production, that is, production sections must be supplied with materials, semi-finished goods, tools, etc., so that projects to be included in operational schedules are fully provided with all the necessary materials and technical requirements.

2. *The Principle of Localising Operational Management.* Practice has shown that it is not a good idea to try and draw up current-production schedules for all shops and sections or to exercise control over their implementation in a single, centralised manner. Neither the head of a dispatch department nor the operative is capable of keeping check on the flow of all components at all stages of operation or on the work of every lathe and machine. Nor is there any need for this. It is much better if the dispatch department head in a particular production section who is responsible for organising the flow of semi-finished goods and the loading of machinery in that section keeps a check on the way that each operation is performed. In these conditions the duty of the one in charge of a shop is to check on the work of the shop sections, while the one in charge of dispatching in the factory as a whole deals with batches of semi-finished goods being transferred from one shop to another. In this way operational management is brought closer to production and each member of the managerial staff has his own, strictly defined area of work.

3. *The Principle of the Selective Flow of Information.* However, even when operational management is localised in the way described above, everybody in management receives

a vast amount of assorted information which he often finds it difficult to take in properly. In view of this, a procedure has been laid down according to which each administrator receives only that information which requires him in particular to take definite action. The kind of information supplied is usually communications about departures from the normal course of production. If, for example, a lathe breaks down in a shop and the normal supply of semi-finished goods is disrupted, then information about this should be given to the section or shop dispatch unit head who can then take appropriate measures. Even if there is some disruption to inter-shop deliveries, it may be possible for the shops themselves to settle the matter, and only when implementation of the entire production schedule is threatened is there any need for the enterprise's operational management body to intervene.

4. *The Principle of Optimal Decision-Making.* In drawing up operational production schedules and implementing them, managerial staff have to decide questions such as fixing the range of goods to be produced by production shops and sections, setting the deadline on particular orders, allocating work to be done by particular lathes and other pieces of equipment, etc. All decisions taken should be optimal.

If the principles set out above are observed, then operational management bodies will be successful in ensuring plan conformity, continuity and a smooth flow of production.

A great deal of work is being undertaken at enterprise level to speed up automation in the field of operational management. More progress has been made here than in many other fields since the very nature of the work requires fast reaction to the flow of production and any bottlenecks arising in it, and also because most such bottlenecks occurring in particular production departments can be foreseen and pre-programmed.

Operational management is undertaken by what is called the administrative machinery of production. Within each branch of industry it is headed by the ministry's production administration department which controls and helps ensure the normal flow of production for the most important orders and carries out methodical management of the administrative machinery of production in institutions and enterprises subordinate to it.

The production departments of industrial administrative departments to be found in ministries do similar work in their own spheres of competence. Operational management at enterprise level is usually headed by whoever is in charge of production—either the deputy chief engineer or, in many enterprises, the deputy director. Usually production planning and dispatch departments do the actual work of operational management under the direction of the production chief.

Economic Service Departments in Industry

The economic service occupies a special place in management since it greatly affects the results achieved by associations and enterprises, their qualitative achievements, and the growth rates and structural development of industry.

Lenin devoted a great deal of attention to economic questions. On the eve of the Great October Socialist Revolution, he wrote in his article "Will the Bolsheviks Retain State Power?" published at the end of September 1917: "When the proletariat is victorious it will do the following, it will set economists, engineers, agronomists, and so forth, to work *under the control of* the workers' organisations on drawing up a 'plan', on verifying it, on devising labour-saving methods through centralisation, on devising the simplest, cheapest, most convenient and universal measures and methods of control."*

Lenin frequently stressed the importance of cost accounting and making savings, the need for scientifically validated plans, and the role played by control and calculation, analysis and the provision of material incentives. He defined the economist's place in the system of economic management.

"But the efficient economist, instead of penning empty theses, will get down to a study of the facts and figures, and analyse our own practical experience. He will pin-point the mistakes and suggest a remedy. The efficient administrator, on the basis of this kind of study, will propose or himself put through the transfer of people, changes of accounting, recasting of the machinery, etc."*

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* V. I. Lenin, *Collected Works*, Vol. 26, p. 118.

Economic service departments do work on drawing up perspective and current plans, exercise economic control over the activity of industrial organisations, analyse the work of all production and economic bodies and sections, handle the financing of enterprises and other industrial organisations, and deal with the organisation of work and wages. They also organise work along the lines of strengthening economic accounting in enterprises, production shops and sections, take part in fixing price lists, establishing the procedures and methods for providing material incentives, and raising the efficiency of production.

Management in industry must pay special attention to improving the quality of production—increasing the efficiency of production and profitability, lowering the prime costs of production, improving its quality, making better use of fixed and circulating assets, and producing those goods which are in particular demand by consumers. If this is to be done, then economic service bodies at all levels of industry and especially in enterprises must be further strengthened.

Economic service departments are headed by a deputy minister in ministries, by the deputy general director in associations, and by the chief economist who is also a deputy director in a number of enterprises.

The chief economist in charge of economic service in associations and enterprises is fully able to intervene in the economic aspects of production, including the work of technical management bodies. He is directly in charge of the planning, work and wages, and financial departments. Since the accounts department exercises the function of control over enterprise operations, it must come under the director, but the chief economist is nevertheless responsible for its managerial methods, the elaboration and improvement of accounting methods and organisation and the records system, etc. The chief economist takes an active part in improving the economic aspects of production. He helps implement measures aimed at the improvement of technology and the organisation of production by helping the technical management bodies to find optimal solutions. This underlines the extreme importance of strengthening economic groups in the technical departments of enterprise management and their systematic methodological direction by the chief economist.

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* Ibid., Vol. 32, p. 143.

The practice of some associations and enterprises in putting computation centres or calculating office directly under their chief economist has proved useful in promoting the widespread application of mathematical methods and use of computers over the whole range of economic work.

A number of factory and works directors have given their chief economist the right to halt the introduction of any measures in the field of technical development and production organisation which, as preliminary calculations show, will prove to be insufficiently profitable.

The active part played by economic service departments is not restricted to evaluation of the effectiveness of technical and organisational measures, for they are also able, on the basis of an analysis of the work of associations and enterprises and their different departments and in the light of state plan targets, to decide the general lines along which technical and organisational measures should be worked out and to give the lead to technical management bodies and production workers in this direction.

The rational organisation of external ties has a great effect on enterprise economics.

The chief economist must also give his attention to the work of enterprise expansion and reconstruction. He is fully involved in all the economic aspects of production carried on at the enterprise.

A thoroughgoing analysis of the work of associations and enterprises and the drawing up of measures to improve production are not a matter for economic service departments alone. This is the outcome of work done by everyone working there. There is wide participation in the drive to improve technical and economic performance by enterprise economic councils, public economic analysis bureaux organised on a voluntary basis, permanent production conferences and other organisations.

The fact that the special post of chief economist exists does not, of course, mean that association or enterprise directors are not involved in economic work. This is as unthinkable as if a director did not concern himself with questions regarding technical developments just because this is the job of the chief engineer.

Planning bodies form an important element in the management system. On the basis of instructions given by a minister or association or enterprise director, they organise work on long-range and current plans, give a lead in the compilation of plans at lower levels, and co-ordinate the work of different departments on drawing up individual sections of long-range and annual plans. They also keep a check on plan fulfilment and organise and carry out an analysis of the way they are being implemented. They help workers mobilise their efforts and resources in tackling the main tasks confronting industry and its branches. To this end they put state plan directives into concrete terms and relay them to each section. Moreover, through their analysis of operations, they are able to point out to the workers which sections are lagging and which tasks are still not solved. For purposes of checking plan implementation, they usually carry out the necessary statistical calculations and accounting procedures and organise statistical work in all sections of industry.

Planning bodies exercise tremendous influence over the whole of industrial activity. By putting a ceiling on expenditure by associations and enterprises, and helping to mobilise latent production facilities, they help lower the price costs of production and reduce the length of the production cycle. They also have an important effect on the specialisation of enterprises and co-ordination of their work with other factories and plants.

They also play their part in promoting technical progress. They participate actively in compiling the plan for technical development and production organisation and keep a check on its fulfilment, assess the economic effectiveness of organisational and technical measures, and propose measures to the technical departments for improving production in view of the need to increase its efficiency.

Labour and wages departments are responsible for all work connected with organising the labour force, wages, and work rates. Their staff help enterprise directors to organise labour and make improvements in its division and co-ordination. They do work on fixing and altering output norms and standard wage rates, and organise work on raising labour productivity. On behalf of association and enterprise directors they prepare the collective agreements regularly concluded between the trade unions representing the workers and the administration and check their implementation. They work out draft schemes for bonus systems of wage payment and settle other questions affecting wages. They help the administration organise socialist emulation at the works. In carrying out their duties, these departments rely on the co-operation of foremen and make extensive use of the experience of leading workers.

The accounts department keeps account of the expenditure of funds allocated for use in different sections of production, sees that state-owned property is properly maintained and kept in a good state of repair, keeps a check on plan implementation, fixes the costs of production, and keeps control of the state of finances. The chief accountant acts as state controller making sure that funds are used in the best way possible and in accordance with the law and seeing that the financial regulations are observed.

The financial departments are responsible for planning financial matters, carrying out measures to increase profitability and improve the rational organisation of finances, and do a great deal of day-to-day work concerning transactions with suppliers, customers, and banking and financial institutions.

An important role is allocated to economics units in the technical service deparments. Their agreement is essential before any technical or organisational measure, including proposals regarding rationalisation measures and inventions, is adopted. They also decide the amount of the award to be paid to persons making rationalisation proposals that are adopted and make suggestions for providing workers with the material incentive to develop technology.

These units also take part in drawing up technical development plans and seeing they are implemented. They make sure that the necessary material, technical and financial resources are available for carrying through technical progress measures and thus help ensure that they are put into effect. In addition they determine the practical effectiveness of whatever measures have been taken which is very important in evaluating the plan for new technology and its implementation. They also fix the final overall indicators showing the level of technology.

As can be seen from the above, the economics units play a substantial role in the work of the technical departments and the methodological direction of their work is an important task for the economic service departments.

To sum up, the economic service departments play an active part in improving production, increasing the effectiveness of technical and organisation measures, and bringing to light possible reserves for increasing output. The economic staff employed by ministries, associations and enteprises deal with all the economic aspects of production carried on in their branch of industry.

The Organisation of External Economic Ties in Industry

Each industrial enterprise is in close contact with other enterprises in industry, transport and communications, with organisations responsible for supplying materials and technical equipment, and with other organisations. It is inconceiveable to think of modern production as forming a closed subsistence economy. The more developed it is, the more varied and close are its ties.

At the present moment ties concerned with the supply of materials and technical equipment to industry and the sale of output are most important, and these are effected by the appropriate supply and sales organisations.

The system for supplying materials and technical equipment represents the wholesale turnover of producer goods as an independent economic sector which is organised by industry and region and is directed by the USSR Council of Ministers' State Committee for the Materials and Technical Supply.

Enterprise and association sales organisations are largely responsible for formulating the enterprise production programmes, since it is they who investigate the state of consumer demand, establish direct contact with their customers or trading bodies and make up the order books. The main responsibility of the supply organisations is to conclude contracts with suppliers best able to meet the special technical requirements as to quality in their deliveries of materials and semi-finished goods, to select rational forms of supply which cut transport and loading-unloading costs and reduce the necessary stocks of goods and materials.

These organisations responsible for supplying material and technical equipment throughout the economy have undertaken to supply many sectors with the goods they need. They receive orders from enterprises and other organisations which they check and collate and then pass on to factories producing these goods, all of which helps to systematise the specialisation of production along rational lines. The supply organisations have their own warehouses and depots where they hold stocks of materials before distribution to customers. Many of these producer goods are transferred directly from suppliers to their customers on instructions from the supply bodies. There are quite a number of wholesale stores where enterprises can find the materials, semi-finished goods, tools, etc., which they need and this helps to improve the operational efficiency of supply.

All supply and sales organisations, whether at enterprise and association level or at national level, have to carry out a number of duties, of which the most important are as follows:

1. Use of new methods for studying demand in the economy for different types of goods. These methods should not simply take account of customers' orders but should be based on an evaluation of the future development of consuming sectors, current trends in technical progress, and the development of ancillary industries, and on an investigation of consumer needs arising from the growing level of prosperity.

2. Improvement in the operational efficiency of organising supplies so that, besides supplying goods in accordance with orders which come within the scope of the plan, the right conditions are established for obtaining the right materials in the right quantities, for which the need will arise in the course of scientific and technological progress.

3. Strengthening of direct ties between suppliers and customers and a reduction in the number of intermediaries in the supply system.

4. Introduction of a rational system of contractual relations between suppliers and customers and a consequent reduction in supply costs.
5. Selection of the most economic forms of supply.
6. Increase in the material responsibility of supply bodies for a particular industry within ministries, associations and dates.

Personnel and Welfare Departments

Personnel and welfare departments and offices in industry are normally responsible for the appointment and placing of staff, personnel records, job training and the organisation of cultural and social facilities. They are to be found in ministries, the central administrative departments responsible for a particular industry within ministries, associations and enterprises. They include personnel departments and offices, advanced engineering and technical training courses, government retraining centres, etc.

One of their most important areas of work done jointly with the various mass social organisations is the compilation and implementation of a plan for the development of social and cultural facilities and the provision of general welfare services. The idea of such a plan originated in some enterprises in Leningrad, was taken up by the telephone factory in Perm, and spread to a number of factories in Kiev, Lvov and other cities. This plan usually comprises a complete set of measures for the technical re-equipment of production and for an improvement in the cultural and professional attainments of the labour force and their social welfare conditions. The preparation of similar types of plans has proved to be a good idea not only at individual enterprises but at the level of an association, subsectors and whole sectors of industry, and even of towns and districts.

This plan usually includes measures to train, retrain and advance the skills of the labour force, to provide them with cultural facilities, establish the right conditions for encouraging an increase in the workers' cultural and professional abilities; measures to improve the workers' health such as the construction and expansion of sports facilities, polyclinics, hospitals, sanatoria, etc.; the construction of housing estates and their provision with all the public amenities; and measures for improving the aesthetic designs of industrial establishments and individual work-places.

The plan of social and cultural measures lays down the amount of expenditure on carrying out the measures described above, the sources of finance, and completion dates, and allocates responsibility for preparing and implementing these measures. What kind of measures should be undertaken is largely decided as a result of sociological surveys which assess the needs of the people working in the particular enterprise or area.

Three factors principally explain why this type of plan came to be drawn up; firstly, there was a substantial advance in the cultural and vocational levels of the workers, as a result of which they made new demands on social and cultural amenities; secondly, the technical level of production was rising and scientific and technological progress was occurring in industry; finally, a new source of finance for these measures was established in the form of a special fund for social and cultural measures and housing construction.

The personnel and welfare departments make a careful study of the needs of workers and their families, see that measures aimed at meeting these needs are included in the plan, and organise and check on the implementation of these measures.

* * *

We have listed above the main functions of management in industry. If the whole of management activity is regarded as a system, then the area in which each of the above functions is carried out can be described as a subsystem which itself comprises a series of even more partial subsystems and is in close contact with other subsystems.

Despite the great diversity in the content of work done by the different parts of management, there is something common in the activity of all of them, namely, they are each responsible for the following vital spheres of work:

a) for laying down the strategic, perspective directions of work arising from the general tasks of developing production;

b) for current and operational management in the course of which the tactical and operational tasks arising from perspective lines of development and their actual progress are raised and settled;

c) for estimating, checking and analysing the work of the enterprise being managed from the point of view of the particular management function, in the course of which information is acquired and work progress assessed with a view to further decisions;

d) for regulating the activity of the unit being managed, that is, taking operational measures to ensure that no divergences occur in the course of work from the established trends;

e) for establishing a creative environment at work, providing incentives to workers to increase productivity, checking on their work and increasing their sense of responsibility for the outcome.

These forms of work are indispensable elements in any management activity. In aggregate they ensure the goal-directed nature, validity and at the same time flexibility of management.

CHAPTER 3

IMPROVING THE WORK OF MANAGEMENT

1. QUESTIONS CONCERNING THE DESIGN AND WAYS OF IMPROVING THE STRUCTURE OF INDUSTRIAL MANAGEMENT BODIES

The complexity and volume of the work of management in industry increases more rapidly than the scale of production itself. This is because the nature of output, the manufacturing process and the technology used in its production becomes more complex, while inter- and intra-enterprise production ties expand. Consequently, unless the organisation, technology and methods of management continually improve, the management process will draw in an ever greater number of highly-skilled personnel.

This shows the need for a scientific, objective approach to deciding the structure of management both within industry as a whole and in its different branches, subbranches, regional complexes, enterprises, and production shops and sections.

The following problems normally have to be tackled in the course of designing a management system: the optimisation and validation of managerial decisions, an increase in the operational efficiency of management, a reduction of costs connected with management work, the setting-up of a rational information system, avoidance of any duplication in management tasks, an improvement in the organisational structure of management, and the equipping of managerial staff with organisational and computing technology.

The basis on which a rational structure of management can be worked out is: a) specialisation of its different links, and b) the locating of operational management bodies in direct contact with production together with the centralisation of general management bodies.

The methods for doing this regard the designing of its structure, its equipping with modern organisational and computing technology, and the mapping out of its forms and methods of work as an integral whole.

Before any industrial management body is set up, a decision is first taken as to whether it is necessary. For this purpose a detailed analysis is made of the range of information which such a body should receive, the absolute need for this information must be decided, and it has to be ascertained whether similar information is being transmitted to any other body. The problem area to be handled by the proposed body must be defined and a decision taken as to whether these questions have to be solved and whether any other body can do the job. In other words, the structure of management bodies is settled with regard to the nature of the work and the range of functions that have to be performed by management.

In its most general form the business of management and goal-directed activity can be regarded as a process that entails setting tasks, acquiring information about their implementation and issuing the next set of instructions. These are the main elements of management. One can say that the system of information and instructions represents the skeleton on which the structure of management is built.

For this reason work on designing the structure of management normally begins with the designing of information and instructions. In industrial management information comprises a set of data describing the fixed parameters of production and economic activity in industry, enterprises and their subdivisions and organisations responsible for the management of various units; information about research and project-planning decisions being taken in the related field, and much else.

Industrial management staff spend a considerable part of their time on collecting information. The accountant searches in card indexes, records, and price lists for the figures he requires. The designer looks in the files for the blueprints of components and subassemblies similar to those on which he is currently working, and gets information about standard models and designs, technical reports on different types of materials, etc., from technical handbooks. The researcher tries to find out from patent records and the specialist literature what work has already been done on the problems that interest him so as not to repeat investigations already completed. In fact every member of the managerial staff makes use of a large quantity of information.

Information-retrieval systems, which facilitate the search for information previously fed into the computer's memory, have now come to the aid of brain workers. The use of these machines in specially established information centres in a particular branch of industry or field of knowledge has proved extremely effective. So that greater use can be made of these centres and more of them set up, a detailed system of classifying the information stored there has been worked out and transmitted to users and a special link-up established between users and the information centre on a subscription basis so as to improve the operational efficiency with which the necessary information can be obtained.

Defining the Essential Information and Means of Its Transmitting and Processing

In organising the management process, it is necessary to decide beforehand:

1. What information should come in from different sections of production and levels of management about the progress of work.
2. Who should provide this information, how frequently and on what occasions.
3. How information is obtained, formulated, and transmitted; the composition of the staff providing it and the means by which information is obtained and transmitted.
4. Who should be given such or such information, what range of information is required by a member of the managerial staff, and in what form it should be transmitted.
5. How to ensure the reliability and authenticity of information, and, if necessary, its checking.
6. Which tasks should be given by management bodies to different sections of production and levels of management,

how frequently they should be set, and the length of time taken to transmit them to the operatives.

7. Who sets the tasks, in what form, what methods are used in drawing them up, and in what ways they are formulated.

8. Who formulates instructions on the basis of information received, within what period of time, how and by what means, and to whom are these instructions given.

The answer to the above questions makes it possible to design the whole system of information used in management, to decide on the means of mechanising its collection, transmission and processing, to establish the volume of work, rights, duties and responsibilities of each section of management and each member of the managerial staff, and to work out the most rational structure of management for the given circumstances.

In designing the collection and transmission of information, a clear answer must be given to the question where and for what purposes will it be used; is it not possible to do without it, that is, how necessary is it; is not similar data available from other sources of information, that is, does it not duplicate previously obtained information; how will the person receiving the information use it; what grounds exist for the time-limits that have been fixed for collecting and transmitting information.

In designing the system of instructions and assignments to be carried out by different sections of production and management, thought should similarly be given to the need for and adequacy of a particular set of assignments, since here too both an excess and a lack of them can be harmful. In working out a system of assignments and instructions, account should be taken of the following: who should respond to this instruction, and how; does the operative really need the instruction or can he manage without it; is it not possible for a similar instruction to be received from another body or person, for in this case there is not only a danger of duplication of assignments but of receiving contradictory instructions; what are the reasons behind the projected frequency of fixing assignments and in what circumstances should one-off tasks be set.

Work on defining the economic efficiency of information and instructions is an extremely important factor in their formulation. This entails making a comparison between the amount of labour required in working them out, transmitting them and putting them into effect, and the effect which they produce. The less labour required to establish, transmit and use a piece of information and the greater the effect this information has on the growth of output, the more efficient it is in consequence.

In setting up a system of information in some or other section of production, the person in charge tries, besides meeting the above requirements, to ensure that the collection, transmission and processing of information makes minimal use of labour; that information is moved and processed at such a speed as to allow its effective use in the prevailing circumstances; that the information equipment provides maximum capacity per unit of volume; that completely authentic information is obtained and is retained as necessary, given the maximum capacity and portability of the computer's memory.

It is important in designing information to divide it into its three different types: 1) statistical information which does not require any response from management but which is needed for fixing the course of production, volume of expenditure, etc.; this information by-passes the manager and flows directly to the statistical bodies; 2) routine information about typical deviations from established norms for which there exist typical solutions for correcting the deviations which are pre-programmed and fed into the automatic regulating mechanism; and 3) information about deviations from established processes which have not been foreseen in the programme and which demand immediate attention from management.

Statistical information is usually fed directly into the computers which then carry out the necessary calculations. Their results eventually appear in statistical reports which are analysed by the experts and the administrators.

Routine information follows a rather different course; it is chiefly obtained through the network of monitors which record the flow of production and is transmitted to the computer into which a programme fixing the normal flow has previously been fed. Any deviation of factual data from the standard prompts an appropriate response from the computer which is transmitted to the control mechanism. These may be either automatic regulators or, in a number of cases, corrected programmes of work for production shops and sections.

Thus, if an automated control system is installed at an enterprise, factual data about the output of different types of semi-finished goods and the execution of operations is fed into the computer where it is compared with the schedule and, if any deviations have occurred, the computer corrects the programme for the following day in order to bring it closer into line with the schedule. This process of obtaining information, processing it and reacting to it takes place either continuously or at intervals depending on the kind of control process used. From this point of view the processing of control data for particular technological processes and for whole sections of an enterprise have a lot in common.

Man's intervention is essential in processing the third type of information, if the process has not been pre-programmed or if the existing programme has not catered for some particular deviation that occurs.

Information can be fed in not only from monitors but also in the form of summary reports, tables, written documents and other forms of data transmission. The computerisation of written information is complicated by the need to translate it into computer language which is a labour-intensive process. However, this process has been made easier in two ways: by equipping the computer with accessories for punching or taping data or with readers which enable the computer to record data directly from tables or other documents.

In describing the role of information in the managerial process, one can say that information is an object of labour (raw material) for management. Only that, unlike the more usual objects of labour, information does not lose or change its use properties in the course of being processed; it is not consumed, but remains intact and can be frequently reprocessed for different purposes. It can build up and in the process acquire new characteristics. That is why it is so important in designing information-processing equipment to include storage mechanisms which should normally meet three basic requirements: 1) the capacity to store a large amount of information; 2) the ability to retrieve and produce the information needed quickly; and 3) compactness of the memory unit.

The total flow of information should be strictly limited. Excessive information is harmful because it causes a waste of time and effort in collecting, transmitting and processing it and also makes the response to it more difficult. As a result the valuable part of the information can turn out to be out-of-date. This is especially true of the third type of information, since it diverts the manager's attention to absorbing information he does not need to do his job.

With a view to setting up a rational system of information, documents and other records are photocopied, a selection is made of what is necessary and sufficient, and the methods and means of obtaining and transmitting information are laid down. Usually photocopying does away with the need for a whole number of documents, separate stages in their processing of different sections of certain documents.

If modern techniques for collecting, transmitting and processing information are used, it becomes much more feasible to exercise operational control over the flow of production and the right conditions are created for increasing information flows without a substantial increase in the amount of labour spent on this work.

Nevertheless, as noted above, excessive information can never be effective. Thus, if teleprinters are installed in every enterprise or group of factories and information about the output of each type of good for each enterprise is transmitted automatically to the industry's computing centre and processed there on the computers, it is not difficult to pass daily information to the ministry about the quantity of goods manufactured by type in the course of the day and since the beginning of the month, about the receipt of deliveries of materials, sales of output and other operating results.

However, when it gets this information about the state of manufacture of thousands of different types of goods, the people in charge at the ministry are not in a position to be able to make use of this information and in fact there is no need for them to concern themselves with the day-to-day control of output of all different types of goods. Even if so-called negative information is transmitted instead, that is regarding goods for which the plan has not been fulfilled, this does not prove very effective since the number of such goods too can be great and in fact any snags which develop in connection with them should be a matter of concern not for ministries but for the dispatch department head at the enterprise, or in an extreme case, for the enterprise director. Only such information should be transmitted to the ministry that demands its immediate intervention.

Managerial Staff: How Its Size Is Set

As the production process develops and grows more complex, the work of management becomes increasingly differentiated. A number of different categories of workers participate in the management of production:

1) top administrative personnel in charge of general management of the enterprise's workforce. They include, first and foremost, the director, production shop chiefs, and foremen;

2) specialists whose job is to work on scientific-technical and economic problems affecting the enterprise's operations. They include designers, technologists, rate-setters, economists, accountants, etc.;

3) personnel responsible for collecting and processing information about the progress of economic activity. They include time-keepers, accounting clerks, order clerks, etc. They perform a considerable number of labour-intensive operations including the preliminary calculating and recording of data; the preparation of documents (requests, requisitions, letters, invoices, etc.); the reproduction (duplicating, photocoping, etc.) of documents; the handling and dispatch of correspondence; the classification, indexing and storage of data; the transmission of information both inside the enterprise and outside it; different types of computing operations for different purposes; and the control and operational regulating of different processes of economic activity. The mechanisation of these labour-consuming operations is a matter of prior importance;

4) ancillary workers who assist both managers and specialists; they include technical assistants, secretaries, copy and shorthand typists, etc. The work done by these members of staff is organised and rated in different ways.

The number of people employed in management has a great effect on its structure and the whole of its work. It is often a decisive factor in deciding whether to merge two similar departments. The size of the managerial staff must be firmly fixed so that it is adequate for the work it has to do and is neither too expensive nor too unwieldy.

The size of management is also important in determining the effectiveness of different systems of management. Any changes in structure or methods of work should be checked in the light of their effect on production and on the number of management workers. This indicates the great importance of working out a valid methodology for rating the work of management.

Work on improving rate setting as applied to the size of management staffs should go ahead along the same lines as for all other categories of workers—by applying scientifically validated rates based on typical sectoral (or intersectoral) ratings.

Deciding on Management Structure

Once the labour-intensity of different jobs connected with the management of production and the range of managerial functions has been established, it becomes possible to decide the structure of industrial management bodies.

The first thing to be done is to fix the range of posts that should be established at each level of enterprise management or in industrial management bodies.

Clear guidelines must be laid down as to the duties to be performed by the person holding the post. A check should be made as to whether the same work is not perhaps being done in some other section of management and as to how the duties set out for that post fit in with those being carried out in ancillary sections. In addition, the extent to which each member of the managerial staff must finish a particular job must be ascertained. It is very important that everyone has the opportunity to act independently in tackling and carrying through jobs within his competence.

Special attention should be given to deciding the number of departments, subdepartments, offices and sections that are set up within the system of management. An effort should be made to avoid having too many subdivisions, since this upsets the correct ratio between top managers and lower-echelon staff in close contact with production, and between the functions and structure of management. For this reason it is important to fix standard staff ratios for particular industries or even industry as a whole, with due regard for the different character of separate subdivisions and work performed within them, for the skill-level of operatives, and for other aspects affecting the manageability of the particular enterprise, etc.

These ratios serve as a guideline in deciding on the composition of managerial units. In this event account is taken of the fact that the basis for working out a rational structure is as follows: specialisation of its different sections; its compact organisation unburdened by numerous petty subdivisions; and the establishment of close contact between operational management bodies and production with a view to decentralising operational decision-making, while retaining the centralisation of general management.

An important condition for organising the work of management along exact lines is the drafting of "regulations" concerning each management body, each part of it, and staff duties.

In fixing the management structure, it is important to make some estimate of the work-load imposed on each worker in terms of the rated labour-intensity of different types of work or service rates.

If some calculation is made of labour-intensity, this helps to fix the total number of workers in each category. It may emerge, as a result, that individual workers do not have sufficient work to do in their basic job, in which case they can be given other types of work which can be done during any lulls which may occur in their main job. Thus, a departmental secretary can be given the job of looking after the files, typing letters, etc. This combination of duties keeps the number of administrative staff low.

The job of designing management systems is complex and labour-intensive. At existing enterprises it includes analysis of the current system of information, the rights and duties of different sections of management, time-and-motion studies, and management structure; planning out the above, including the forms and techniques for collecting, transmitting and processing information; and fixing the number and composition of management links, etc. All this requires a good deal of time and a considerable expenditure of labour and resources.

It sometimes happens that enterprise managers are worried whether the expenses incurred in revising the structure and system of work of management can be recouped. Naturally the returns from this type of work are increased most, if the design and introduction of the managerial system is simplified and made as cheap as possible.

With this in mind, it has proved a good idea to elaborate typical organisational solutions for different types of organisations. In particular, a system of management has been created for industrial enterprises that takes into account the specific features of enterprises. These features depend on: 1) the nature of the production process (continuous or discontinuous); 2) the type of production (mass, serial, or one-off); 3) the main method of organising production (flow, batch, unit) and the complexity of output; 4) scale of production (quantity of output, value of fixed assets, size of personnel and power capacity) and 5) the degree of mechanisation and automation. In addition, the following factors may be of decisive importance for certain sections of management: the form of ties with customers (for sales bodies); the way in which the settlement of accounts with suppliers and customers is organised (for financial bodies); the main form of wage payment (for labour and wage departments and the payments section of accounts departments), etc. Having regard for the grouping of enterprises according to the above attributes, a representative enterprise can be selected for each group and a system of management worked out for it which is then recommended for use at other enterprises in this group with due regard for their individual characteristics.

For purposes of classifying enterprises the following table can be used:

Classification of Enterprises by System of Management

Type of production	Enterprise size	Complexity of output			Method of organising production			Character of production process		Degree of mechanisation		
		simple	medium	complex	flow	batch	unit	continuous	discontinuous	highly automated	mechanised	manual
1	2	3	4	5	6	7	8	9	10	11	12	13
1. Mass	11. Large-scale											
	12. Medium											
	13. Small											
2. Large-series	21. Large-scale											
	22. Medium											
	23. Small											
3. Medium-series	31. Large-scale											
	32. Medium											
	33. Small											
4. Small-series	41. Large-scale											
	42. Medium											
	43. Small											
5. One-off	51. Large-scale											
	52. Medium											
	53. Small											

This table can serve as a kind of "key" for classifying enterprises. An actuil enterprise can be given a reference number with the help of this "key" in the following way: for example, an enterprise with large-series production (1.2), operating on large scale (2.21), producing complex output (5), with batch organisation of production (7), by a discontinuous process (10) with mechanised production process (12), would be given the code number 1.2/2.21/5/7/10/12. This group should have its own typical scheme of management which will serve as a base for drawing up a scheme for the particular enterprise. It should be appreciated that, in going from left to right of the table, the factors to be taken into account in designing a management scheme become less important. The effect that particular factors have on the number of managerial units and staff can be ascertained with the help of a regress equation by means of the correlation method.

However, these typical solutions should in no circumstances become binding. They should be regarded as recommendations which can be used in one or other enterprise at its own discretion.

As the number of typical management schemes available from project-planning organisations increases, the job of designing them for a particular enterprise becomes increasingly a matter of adapting one of them to the particular conditions of production. Moreover, typical solutions can be worked out for different subsystems of management. All these developments will reduce the amount of labour spent on this work quite considerably and will thereby increase its efficiency. All work on designing enterprise systems of management can be successfully carried out by special industry or inter-industry project-planning organisations.

A modern management system equipped with organisational and computing resources is most efficient when it embraces all functions of management and all sections of managerial staff. Experience shows, however, that it is rarely possible to construct a complete system of management in one go and it is therefore necessary to proceed by stages. In this case one or two closely related subsystems having minimal ties with other subsystems can serve as the subject of partial reorganisation. In the alternative case, the presence of a substantial number of links with other subsystems that have not been reorganised can complicate the reorganisation of the particular subsystem.

2. THE APPLICATION OF MODERN ORGANISATIONAL AND COMPUTING TECHNOLOGY

Modern management aims at increasing efficiency and lowering production costs, a large part of which is made up of expenditures on maintaining the machinery of management. The number of workers in management grows from year to year, in fact, the trend indicates a slight increase in their relative number. They take a direct part in creating material values, and their work is productive.

With a view to further raising the level of industrial management, that is, ensuring that valid and optimal managerial and planning decisions are taken, the operational efficiency of management increased, and management costs lowered, the 24th Congress of the Soviet Communist Party set the following task: "Work shall be started on creating and introducing automated systems of planning and management in economic branches, territorial organisations, associations and enterprises, with the object of creating a nationwide automated system of collecting and processing information for accounting purposes, for planning and managing the national economy on the basis of a state system of computing centres and a single nationwide automatic communication network. Moreover, from the very outset the application of the principle of the organisational, methodological and technological unity of this system shall be ensured."*

A careful comparison of different variants should be made in selecting the most efficient designs, technology, plan and other projects. This requires a great deal of work which is constrained by urgent deadlines and a lack of sufficient personnel who can be brought in on the job.

If design, technological, planning and other bodies are equipped with sufficient, high-productivity computing and other technology, the calculation of variants is simplified, the selection of optimal variants made easier, the labour-intensity of the work connected with planning and carrying out the production process reduced, and length of time it takes to master new production and introduce new technological processes shortened.

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* *24th Congress of the CPSU*, p. 321.

There is a far greater need in modern conditions for increasing the operational pace of production management. As production becomes automated, there is a multiple speed-up of technological processes, while the impact of any disruption to output increases sharply, since each minute that highly-productive machinery stands idle entails tremendous losses.

This problem can be overcome, if management is given the automation and remote-control equipment it needs, and if measuring-registering devices, signalling mechanisms, teleprinter systems and closed-circuit televisions are used in production. So, if management is equipped with modern technology, it becomes possible not only to cut the size of staff and release some of them for other work, which is of itself very important, but also to improve the quality of the enterprise's entire operations. For this reason a great deal of work is being done in many Soviet enterprises on designing flows of information and the complex machinery required for collecting, transmitting and processing it. When this is done, repetitive, so-called routine decisions are taken by the machine itself on the basis of pre-programmed typical situations. If any unexpected situation arises, then the decisions are taken by the expert. Many hydropower stations are operated by remote control. Remote control is also used in a number of processes where visual access is difficult. Computing centres and calculating sections operate at many enterprises.

In order to cut managerial costs while still improving the quality of management, a systematic, probing review is made of the information system and the methods of collecting, transmitting and processing it, and the better use of management's working day.

Until recently the overwhelming part of information was drawn up in the form of documents compiled and processed manually. This made management very labour-intensive, limited the possibility of obtaining information in good time, and made really operational management difficult to achieve. A certain amount of work has been done on mechanising this process. Special photocopying machines make light work of reproducing documents in multiple copies. In a number of cases the selective printing of separate items of information from a prepared matrix is adopted, for example, work schedules, requisitions for materials, invoices, and other documents with a preparatory technological map, etc.

These methods are, of course, more progressive than manual ones but they still do not guarantee the necessary reduction in labour-intensity nor improvement in the operational pace of management.

Every piece of equipment that a member of the managerial staff has to help him in his work must be suited to the maximum extent possible to the needs and character of his job. Complex computing and other organisational technology may prove to be of no use here, while on the contrary the simplest gadgets such as slide-rules, log tables can be highly effective. The question of the communications system available to each worker is also an important one. The practice of localising communications has proved itself to be a good one, that is, the setting up of small local switchboards including selectors which provide the workers with direct contacts arising from the nature of their work and simplifying communication processes.

Equipment for members of the staff includes office furniture which must be correctly designed. A properly-designed table, filing cabinet, chair and armchair provide essential comforts, increasing productivity and reducing fatigue.

Different kinds of filing systems which make it easier to find and use the documents held in them, the type of card indexes used, etc., are all part of the job of organising managerial staff work-places. In some instances a worker has direct access to the typing pool which enables him to dictate a document on to a dictaphone for subsequent typing. All these measures create the right conditions for high-quality work by management, enabling the staff to concentrate on the matter in hand and to manage production more operationally and expertly.

It is not however possible to design and produce every item of office equipment at each individual enterprise. If an attempt were made to do so, it would turn out expensive, complex, prolonged, and insufficiently high-grade. The centralised designing and manufacturing of organisational equipment has proved a good idea.

The equipment of offices is done by three types of organisation: 1) experts in the field of organising management who work on classifying work-places according to purpose, sphere of activity, and other details; 2) project-planning organisations concerned with the design of office equipment including office furniture, communications equipment, signalling mechanisms, simple types of calculators, duplicating machines, card indexes, filing cabinets, etc; and 3) industrial enterprises specialised in the production of office equipment.

The job of organising the work of management on a proper footing does not consist solely in designing the organisation of work-places and manufacturing the equipment needed for them. An extremely important aspect of this work is training managerial staff in the use of all this equipment.

3. EVALUATING THE EFFICIENCY OF DIFFERENT VARIANTS FOR ORGANISING MANAGEMENT

Work on improving the organisation of management or on drawing up and introducing a new system normally concludes with a review of its advantages. These should be expressed by a definite system of indicators, by means of which the management system can be described in both qualitative and quantitative terms, and which should be obvious and indisputable. They should be backed up not by the personal opinion of some or other expert, no matter how highly-qualified, but by objectively accurate facts and figures, including above all data regarding the total savings to be expected from introducing the new system of management, compared with past expenditures. In this way a comparative account can be made of the projected and the existing organisation of management.

It would however be incorrect in assessing the progressive character of the new system to restrict the exercise solely to a comparative analysis for, in changing from the existing to a new form of managerial organisation and techniques, we cannot proceed through all stages of improving the managerial processes step by step. Obviously, an attempt should be made to introduce the most progressive systems of management from among those that fit in with the existing conditions. This makes it necessary, in analysing the projected system, to compare the indicators describing the draft scheme with those showing the level previously attained by the organisation in question and those achieved in the most advanced type of similar organisation.

What range of indicators can be used in evaluating draft schemes of organisation and management techniques?

Experience points to the advisability of using three types of indicator: indicators fixing the level of management techniques and organisation; those describing their efficiency in regard to management costs; and those determining the efficiency of operation of the entire unit being managed.

It is essential to make an independent calculation of what savings are likely to result from measures to improve managerial organisation and techniques not only in the field of management but also in production as a whole because the work of management participates in the process of production not by acting directly on the object of labour (raw materials, etc.) from which the finished article is made, but indirectly, in an intermediate way, through its effect on the workforce engaged in production. Hence the efficiency of management should become apparent in the efficient operation of the entire production unit.

Indicators of the Level of Managerial Techniques and Organisation

One indicator of the progressive nature of the suggested scheme of organisation is the level of mechanisation in management.

The level of technical equipment can be described, according to the various types that exist, by such indicators as the amount of copying work that is mechanised: the amount of computing that is done on machines and with other devices; the quantity of primary documentation that is processed by mechanical means, etc.

The speed of data transmission and of computers, the size of their memory and their input-output speed, the productivity of printing and copying machines, etc., all serve as indicators of the quality of mechanisation introduced into the different processes of management.

The reliability of operation of control mechanism, measured by their life-span and the length of time they can operate without breaking down, is a special indicator of their quality.

Some of the above indicators can also be used in the case of mechanised or partially mechanised sections of management. The transmission and processing of information should be fast enough to deal in time with any snags that may crop up in the course of production. It often happens, especially when modern management techniques are being introduced, that data regarding the output of all types of goods is collected and transmitted on a daily basis, without there being any real need for this.

Such frequent transmission of data is unjustified, since it leads to overloading the system of data collection, transmission and processing, and to distracting the manager's attention with a lot of partially unnecessary information, which lowers his response to essential information.

Insufficiently frequent transmission of information leads in turn to the impossibility of reacting to changes in the enterprise, etc., being managed. The situation often arises in sections with high-speed processes that the speed of collecting and the frequency of transmitting information become so great that no human being is physiologically capable of reacting to the information received. At the same time a delayed response to changes in the technological parameters of machine operation may lead to the output of poor-quality goods, disruption of production, and even accidents.

The level of managerial organisation can be described by using a number of indicators, among which should be included the ratio of managerial staff to the industrial labour force as a whole. This indicator can be used to provide a comparative description of similar-type organisations. Any change in it can only be assessed as a result of careful analysis, since it is not possible a priori to determine the impact that any decrease or increase in it has on the efficiency of production. Thus, an increase in the ratio of managerial staff may mean inflated numbers but may also be the result of a high level of mechanisation of production or a significant increase in the volume of work being done in mastering new output, in which case the ratio of managerial staff increases as a result of a reduction in the number of production workers. Consequently, in order to assess a change in the indicator, a careful analysis must be made of the reasons for it.

The level of managerial organisation also shows up in the ratio of top management personnel to ancillary workers and figures on the use of working hours by the main categories of staff. In the latter case it is a good idea to pick out the following ratios: a) the amount of work done by a person not in accordance with his qualifications; b) loss of time at work; c) the amount of overtime worked.

Indicators of the Comparative Efficiency of Management Systems

A second group of indicators, constructed in accordance with the same principles underlying savings estimates in other fields, characterises the efficiency of the measures that have been undertaken directly in the management sphere.

The relative savings in investments and in current costs per annual volume of production or unit of output can be taken as a basic indicator of the savings resulting from different measures directed towards improving the techniques and organisation of production itself and of management. Actual costs incurred before the proposed measures are carried out (in order to determine the savings obtained as a result of introducing the measures) and indicators in the best leading sectors of a similar type, whose experience has been reported in Soviet and foreign journals (in order to determine the progressive character of the measures undertaken) can be taken as a basis for comparison in making this calculation.

It is particularly important to include in the above calculation a coefficient that takes account of the duration of costs at the stage of introducing the proposed measures. Such a coefficient is particularly vital in present conditions when the time taken to introduce many measures is exceptionally long and its use, in the form of compound interest on invested funds, may prove an additional stimulus in speeding up the introduction of new designs in production.

The initial costs incurred in improving the system of management at some enterprise, etc., include expenditures on designing the new system and designing different pieces of machinery, mechanisms, and devices connected with the new system; expenditure on producing or acquiring and on introducing these items of equipment for management, including the paper-work involved; and the cost of retraining personnel in connection with the introduction of new management organisation and techniques. These costs can be included in their entirety in the estimate of savings arising from the project in hand, if the job of designing and preparing the scheme is done exclusively in the given organisation. If, however, they are incurred in producing a typical scheme which can be used for a number of other projects, then some of the costs need only be indicated partially.

The current costs of management comprise total appropriations for maintaining all sections of management—design organisations, technological bodies, data-computing centres, etc. These costs can be put down under headings for the different sections where the measures are being introduced as well as for the entire system of management bodies.

Performance indicators regarding the efficiency of measures to improve management comprise: the speeding-up of data transmission and an increase in its volume; the feasibility of reducing the number of certain categories of workers, especially where labour shortages exist; and the other indicators described above.

Overall Evaluation of the Efficiency of Measures for Improving the Organisation of Management

A tendency has emerged in practice in deciding what savings are to be expected to define them resulting from particular measures. Since, however, savings obtained from a particular measure are intermeshed with others, this method of calculation may lead to double-counting on a large scale.

In order to avoid doing this, it is necessary to define strictly those savings obtained from introducing particular measures.

An estimate of the savings attributable to different variants of management organisation and techniques should be made at different stages of designing the new system:

1. At the pre-design stage, when the designers face the task of improving the managerial system at some enterprises, etc. It is at this stage that the main lines of work are normally laid down—mechanisation in different sections of management; changes in primary documentation and in organising the collection and transmission of information; fixing a more clearly defined degree of specialisation by managerial departments, etc.

Also at the pre-design stage, full account should be taken of the new tasks facing the managerial system and the unit to be managed, which may be connected with changes in the scale of production, specialisation, new requirements as to the quality of output, the application of new technologies in production, etc.

In these conditions the indicators of managerial efficiency requiring elaboration appear as a target to be reached as a result of drawing up and introducing a scheme, and in the light of the consolidated standards of efficiency set for different means of improving managerial organisation and techniques.

2. At the stage of the projected target or draft design, the above calculation should be done again, this time taking into account the actual solutions underpinning that particular stage of the designing operation. Here too the consolidated indicators describing the efficiency of some or other solution form the basis for the calculation.

3. The third stage of calculation is to decide the projected efficiency of the working design in the light of actual standards.

4. Finally, the actual efficiency of the design that has been introduced is determined at the concluding stage. This calculation often has to be done twice—once, when the standard time-limit for mastering the scheme has run out, and then after it has in fact been fully mastered.

4. PARTICIPATION OF THE WORKING PEOPLE IN MANAGEMENT

Can the whole of enterprise management be said to be in the hands of the administrative staff alone?

Of course not! Each worker is as directly interested in developing production as the director and other managers at the enterprise, which is why the entire work force and all the social organisations functioning at the enterprise take part in the process of management.

The 24th Congress of the Soviet Communist Party devoted a great deal of attention to the question of drawing production-line, technical, engineering and office workers into taking an active part in compiling plans and managing production. Factory branches of the Communist Party to which millions of factory and office workers belong play a great role in management of the economy.

Party activity is an important means of organising worker participation in enterprise management and in tackling the whole range of economic questions. The Party branch acts as the organiser for the workers and all social organisations in tackling the urgent tasks arising in the building of communism, takes the lead in socialist emulation to complete the state plans and reach the targets which the workers have of their own accord set themselves, mobilises the workers to seek out and make better use of latent production facilities at the enterprise and to ensure the widespread application of the latest achievements in science and technology and of the experience of leading workers, and tries to strengthen discipline at work, increase labour productivity steadily, and improve the quality of output.

The enterprise trade union organisation has an important role to play in the solution of questions related to the economy. The local trade union works committee gives factory and office workers the opportunity to take part in management through general meetings, production conferences, and other gatherings. It directs the councils of scientific and technical societies and the society for inventors and rationalisers.

The trade union committee takes part in drawing up draft production plans, plans for applying new technology and for construction at the enterprise, draft plans for the construction and repair of dwelling houses and social and cultural amenities as well as plans for the social development of workers at the enterprise. The trade union committee concludes a collective agreement with the administration on behalf of the factory and office workers, checks its implementation and, jointly with the administration, sees that the obligations written into the agreement are fulfilled.

Practical improvements are being made with regard to the concluding of collective agreements. This is being done in accordance with the resolution adopted by the all-Union Central Council of Soviet Trade Unions and State Committee of the USSR Council of Ministers for Labour and Wages, dated 20 August 1971, "On Procedures for Concluding Collective Agreements".

The agreement includes sections on worker participation in management, on applying the achievements of science, technology and leading workers' experience, on improving working and living conditions for women workers, and on the care and training of young people. Measures of control over the implementation of collective agreements by higher-level economic and trade union bodies have been strengthened. The local trade union committee has the right, if necessary, to put before the appropriate organisations questions concerning the removal or disciplining of managers who fail to carry out their duties in accordance with the collective agreement, show bureaucratic tendencies, permit a lot of red tape or are guilty of breaches of the labour laws. The enterprise administration, jointly with the trade union committee, decides on the allocation of the funds for material incentives, and for housing, social and cultural measures, and confirms the expenditure estimates for these two funds; in agreement with the works committee, monies can be redistributed between these two funds within prescribed limits. The two parties to the agreement decide together on the awards and the other kinds of incentives, material assistance and bonuses that are to be made out of the material-incentives budget in accordance with the results of the enterprise's annual operations. The works trade union committee receives reports by management on fulfilment of the production plan and obligations under the collective agreement, and on measures for organising their members' working and living conditions and cultural provision. In accordance with the resolution concerning local works trade union committees, the views of these committees are sought in appointing workers to leading managerial posts in the enterprise.

The trade union committee takes part in establishing the factory regulations regarding work, wage and bonus systems, lists of trades and highly-paid jobs, and workers' ratings; in reviewing output quotas, in making available special clothing and food; in timing holidays, fixing shift-schedules and dealing with other matters affecting the working, living and recreation facilities of the workers; no factory or office worker can be dismissed without the prior agreement of the trade union committee.

So that the trade union representing the workers' interests can discharge its important duties successfully, the administration is obliged to give it free premises, transport and communication facilities and undertake to meet all expenses arising from their maintenance, repair, cleaning, equipment, etc. The enterprise must give the trade union committee and the other social organisations a stock of cultural and sports goods free in each financial year.

The trade union committee takes charge of production conferences, conducts general meetings, organises jointly with the administration economic conferences and conferences of leading production workers, and organises socialist emulation and the campaign for a communist attitude to work.

The standing production conference is an important form of worker participation in management. Its entire work is devoted to the task of fulfilling and overfulfilling state plans, searching out and using production reserves, creating the right conditions for high-productivity work, and improving enterprise management methods.

The conference examines drafts of current and perspective plans, questions concerning the improvement of factory planning, the organisation of production, work, wages and technical rates, as well as proposals for making sure that each worker fulfils his output quota and that the quality of output improves and prime costs are lowered.

It is also responsible for reviewing measures to ensure health and safety at work, safety techniques, the initial and further training of specialists, the correct use of leading workers, and the strengthening of discipline at work.

Socialist emulation is one of the main forms of mass participation in the management of production. The desire of the workers who are the real masters of production to make an impact on the whole of social production and enterprise operations most easily finds expression in socialist emulation. Thus, in drawing up the conditions for emulation and socialist commitments, the workers actively participate in searching out and using latent production facilities and formulating taut production plans for their enterprises, including comprehensive plans for the social development of the entire work force. In organising the campaign to see that commitments are carried through to completion, the people taking part in it make a constant impact on improving the organisation of work, production and management and the efficiency with which the whole apparatus of economic management functions. By comparing the results of socialist emulation and assessing the outcome of the various plans and commitments, the workers exercise permanent control over the whole of production, analyse the entire operation and, on this basis, make constructive proposals to management about doing the work better and more efficiently.

The activity carried on by the scientific and technical societies represents an important form of worker participation in management. Engineers, technicians, economists, and worker-inventors belong to branches set up at enterprises. A council, consisting of as many people as the general meeting or conference decides, is responsible for day-to-day work of the branch. These scientific and technical societies channel their members' initiative to working on new technology, introducing scientific organisation into work and management, improving the quality and reliability of finished articles and participating in the drafting and implementation of plans for the application of new technology. They hold scientific-technical conferences, seminars, reviews, and competitions, and organise courses in scientific, technical and economic subjects.

Factory branches of the All-Union Society for Inventors and Rationalisers have an important role to play. They give every assistance to work being done on inventions and rationalisation proposals, take part in planning the application of technical innovations, organise reviews and competitions for the best proposals, organise collective teams keen on developing a new idea, and take the lead in setting up patent offices, design bureaux, and factory advisory committees for innovators, organised on a voluntary basis.

The work of the public control bodies at enterprises is another important form of worker participation in management. Members of these groups and offices are elected at meetings or conferences of workers for a period of two years. The group then elects its chairman, his deputy, and if necessary a committee by open vote. At the same time they set up sectors and commissions to deal with particular matters, and decide on a plan of work. These groups and offices also carry out checks, raids, and reviews, at their enterprises, take part in checks and audits of production and financial operations, and take measures to remedy any shortcomings that have come to light at their enterprises.

Branches of the Znaniye (Knowledge) Society have an important job to do in disseminating information to all members of the work force. Society members give lectures and consultations, help organise study courses, and make the experience of worker-innovators widely known.

It is thus apparent that an extensive network of standing social organisations exists in the sphere of production and that a whole series of effective measures has evolved through which the workers can daily have an influence on economic, technical-production and social matters at their enterprise both via management bodies and directly.

Public ownership of the means of production creates the objective conditions for workers being interested in the solution of matters affecting production. The 24th Congress of the Soviet Communist Party laid particular emphasis on the need to extend worker participation in management. In his report to the Congress on behalf of the Central Committee, General Secretary Leonid Brezhnev said that "one of the Party's central tasks is to draw the working masses into the management of production on an ever larger scale".*

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* *24th Congress of the CPSU*, p. 84.

As was seen above, each social organisation performs definite functions in participating in management and has its own sphere of activity in which it makes contact with some or other section of management. An analysis of the breadth of worker participation in management shows that already now the workers and their social organisations deal with practically the whole range of questions that have to be settled at the enterprise, so that the question arises of finding the best way of improving their effective participation in economic affairs and drawing more and more people into this activity.

One way is to work out the mechanisms for precise, joint and co-ordinated activity by the enterprise section and the appropriate social organisations and the subsequent financing and codification of these forms of contact in resolutions regarding sections.

This requirement arises from the "Regulations Governing a Socialist State Production Enterprise", Clause 4 of which states: "management of the enterprise is exercised on the basis of one-man managerial responsibility. Social organisations and the entire work force at the enterprise participate widely in discussing and implementing measures to ensure completion of the state plan, to develop and improve economic-production operations at the enterprise, and to improve the workers' working and living conditions."* It is therefore important to establish a permanently functioning mechanism which makes it possible to combine or, as Lenin said, "merge together" the efforts of the workers with measures taken by the administration.

The efficiency of the entire management of production will depend on how rationally the forms of contact between the administration and the social organisations take shape in the work of the enterprise.

Broader participation of workers in management requires constant efforts to raise the level of knowledge and skill on the part of factory and office workers, the degree of mechanisation and automation of production, and the extent to which rational use is made of working hours and free time, etc. A comprehensive approach to this problem is required. It can be achieved with the help of plans for the social development of factory workers. One of the tasks confronting the organisation of management is to train every worker in the job of management, to draw him into this work, and to create the best conditions in which he can and will want to exercise his right to participate in management as effectively as he can.

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* *Decisions of the Party and the Government on Economic Matters,* Vol. 5, *1962-1965*, Politizdat, Moscow, 1968, p. 692 (in Russian).

CHAPTER 4

CONTENT AND ORGANISATION OF A MANAGER'S JOB

1. DEFINING AIMS

The character and methods of management in socialist production determine the demands made not only on the whole system of management throughout the country but also on each individual manager. His main duties are to think out the direction and aims of work; to convince those working under him of the need to achieve these aims and to direct them in carrying out the tasks set for them by the Communist Party and the Soviet Government, and to organise them in tackling these tasks.

The main job of a manager in any section of production is to create the right conditions for the further development of production. It is, of course, extremely important to fulfil all the plan targets within the set time-limit and to ensure the profitability of production. But if, in doing this, a manager fails to think about the long term and to work on problems connected with developing and modernising production, the time will inevitably come when the work force will lose its leading position. This is why the work of a manager and the labour force as a whole should be assessed on the basis of a combination of current operational results and the establishment of suitable conditions for the further development of that particular section of production.

Every manager must first of all define the aim of the organisation he heads. This aim must cover some tangible period of time, arise from the main direction of work, and require a certain amount of tension to achieve. It should be formulated in concrete terms so that it can later be accurately established whether it has been reached and to what extent. It is not obligatory in fixing such an aim to refer to any particular calendar period (a year, a five-year period), but this target date should in every case be clearly laid down.

There have been cases when an enterprise has decided in a particular production year to make a special drive to improve the quality of output. This does not mean that no efforts were made to achieve higher productivity and a growth in profitability but that questions concerning quality were in the forefront of attention. This was reflected in particular indicators regarding work—the achievement of a certain minimum percentage of high-quality goods in total output by the end of the year, the reduction to a certain level of the number of rejects, an increase in the life of finished goods by so many years, etc. In each specific case the aim should emanate from the main tasks to be done. The target date for accomplishing the aim should be realistic.

Many managers, whose work is systematised and carefully thought through, establish some kind of "hierarchy of aims". The general task to be carried out over a lengthy period of time is defined, and then a more limited aim is formulated for each subperiod and this constitutes a stage in attaining the general aim. Aims often take the shape of a programme.

The concept of management necessarily incorporates changes occurring in the system being managed. The job of regulating it so as to maintain it in its existing state is only part of management. External or internal influences on the system, which aim at changing its state, form a programme of management which may be external, if set by a higher-level organisation, or internal, if drawn up within the enterprise. It may be fed into the computer memory beforehand or carried out through the direct efforts of the managerial staff. But in all cases the aim as defined must be carefully thought out and validated.

When fixing the general aim, the factory or works director normally seeks the advice of leading officials at the ministry, the chief administrative department and the association, since they are aware of the tasks facing the whole branch of industry. It is easier for them to decide to what extent the proposals advanced by the director fit in with the general lines of development in that branch. At the same time the director discusses the aim in detail with the Communist Party organisations, those experts most closely connected with tackling the particular task, the trade-union organisation, and the engineers, technicians, and workers.

The experience of many managers in all sections of management testifies to the fact that the work goes well if the manager and the workers are able to give a clear answer to the question: what do we want, what is our aim, what are we trying to do?

The most dangerous thing for both manager and workers is to work without an aim and to get caught up in the daily round. If there is no aim, management is wasted and all that remains is the day-to-day regulation of the organisation and its staff, maintaining them at their previous level which inevitably means that they drop behindhand.

One of the most important qualities needed in a modern manager today is the ability to decide current problems without losing sight of the long term and to think out a strategy of development for the unit being managed and a strategy of managerial methods.

The scale of the aims and the approach to defining them differ substantially depending on the manager's rank. Someone who is in charge of a branch or subbranch of industry has information available to him which enables him to decide technical and economic policy for that branch for a greater period of time, and to set more important tasks before the branch than, for example, an enterprise director has in tackling a similar task. The latter's possibilities are much more limited.

Managerial talent lies in being able to understand the workings of the unit being managed and its development trends; in keeping in touch with actual reality without being a slave to circumstances; in putting forward taut but realistic plans.

The ability to adopt a systems approach to managerial decisions is a vital requirement in a manager.

It is not simply a matter of studying a particular section of industrial production in all its interrelationships with other sections, but of a systems approach to evaluating a particular measure, with due regard for all aspects of its impact on the work of this particular section of production. Measures intended to raise productivity may also affect a change in average wages, the prime costs of production, or the rate of turnover of circulating assets, and indirectly affect the quality of output and much else. If the secondary effects of measures that have been undertaken are ignored, it not infrequently happens that they are not correctly evaluated.

Lack of a systems approach and the isolated examination of a particular phenomenon and those changes taking place in it under the impact of managerial measures may lead to the most adverse consequences.

Simulation techniques, which have in recent years become widespread in management practice, have acquired immense importance in the decision-making system. Simulation involves experimenting with models. Once he has programmed the basic data about the work of some or other section of production and the tasks confronting it, the manager can feed into the computer other data describing changes in the work process, in the aim set or in the decisions that have been taken. By using this method, he can simulate different decision variants, analyse their consequences, and select the optimal solution.

In some instances games theory is used to find out what reaction some or other decision may provoke in ancillary or lower-level units. The participants in the game assume the duties of some expert and "play out" the implementation of some or other decision and its consequences, using either fictitious or real material. This increases the validity of the decisions and improves the way their implementation is organised.

As the production processes develop and become more dynamic and varied, so also does the nature of the decisions taken in the course of management change.

If previously the medium- and top-ranking manager's attention was fully concentrated on current and operational decisions, at the present time the number of events requiring operational decisions has become so great that nobody is capable of processing all the information about them and react to it. A substantial part of operational decisions are therefore handed over to automatic control devices, while the manager undertakes in the main to make the long-term and current decisions.

In taking a decision, every manager tries to find the one that is most acceptable and valid. This does not however exclude an element of risk, when many decisions have to be taken. In selecting one of many variants in the field of production technology or organisation, a manager often risks taking a non-optimal decision.

2. THE DECISION-MAKING PROCESS

Every system of management in whatever sphere it operates includes three elements: a study of the prevailing conditions, decision-making, and managerial guidance in carrying out these decisions.

The actual conditions are studied by analysing the information received. Decision-making entails deciding the future lines of development for the system being managed. These decisions may be strategic, determining the general lines of development for the unit being managed; tactical, setting tasks for the immediate period ahead; or operational.

One may say without any exaggeration that decision-making holds a central position in economic management. Decision-making theory should not, of course, be turned into a list of ready-made prescriptions with indications of how to act in such and such circumstances. Industrial production represents a complex and fast-changing system, in which a large number of people with varied skills, a lot of diverse technology, and various types of raw and other industrial materials are involved. In an industrial system many changes occur under the impact of factors external to the particular section (suppliers, consumers, financial, planning and other organisations). Internal technological conditions as a breakdown of plant or the updating of machinery, the application of new technological processes, types of raw materials, and instrumentation, etc., may also have an effect. Certain elements of subjectivism, depending on an individual manager's level of knowledge and ability, are present in every managerial decision. All the same, certain objective principles underpin these decisions and must be taken into account by the manager. The extent to which these objective principles are heeded and their impact on production depends in large measure on the capability of the workers.

To manage means to take decisions. These decisions may concern the growth of the economy as a whole and its separate sectors; they may determine the development of some particular section for a long period of time ahead or in the short term; they may touch on major problems determining the developmental strategy of the subsystem in question or they may be tactical and operational. In every single case these decisions should stem from the objective conditions prevailing and should be made with full regard for them.

What is necessary to the decision-making process? In taking any decision connected with economic management, the following things are necessary: 1) an understanding of the overall aims before the economy as a whole; 2) a knowledge of the tasks arising from these aims for the unit being managed; 3) a clear appreciation of the state of affairs in the unit and its immediate environment, and of their development tendencies; 4) a proper definition of the methods to be used for changing the unit from its present state to the one that is desired; and 5) the ability to react promptly to changing circumstances and new tasks confronting the economy.

An understanding of the state of affairs in the unit being managed and its immediate environment, and of their development tendencies can be achieved through the receipt of systematic information. However, even when information is extremely well organised and reliable, it is quite possible to take either correct or mistaken decisions. In order to create the right preconditions for taking optimal decisions, the following questions should be carefully considered: the optimality criteria for decision-making; who takes the decisions, and at what level; types of acceptable decisions at different levels; the length of time needed to make decisions after receiving information; the system for formulating and transmitting a decision; the system of control over the implementation of decisions that have been taken and for checking their actual effectiveness.

Decisions may be either formalised whose effectiveness and feasibility can be directly quantified, or non-formalised—capable of logical proof. Decisions can be validated with the help of computers, though the final decision rests in both cases with the manager. It is, of course, difficult to make detailed calculations of changes in every single indicator of efficiency regarding the operations of an enterprise or other organisation in the course of taking each decision. Nor is there any need to do so. In many cases it is perfectly obvious whether or not the particular decision will be effective, and it is only in those cases when some doubt arises as to the effectiveness of some decision or other that it becomes necessary to make some calculations. Yet here again it is not obligatory to calculate every possible indicator, since it is sufficient to do just one or two of those that are the most important in the given circumstances.

Dynamic model-building is one effective method used in the decision-making process at enterprises.

Manager's judgements about the processes triggered off by some or other decisions and about their after-effects are to a considerable extent subjective. Work on checking the effectiveness of a decision by means of an experiment is fairly complex. If the experiment flops, it may cause losses to the economy. Naturally, recourse should be had to making an experiment only when its effectiveness has been proved beforehand. New circumstances often crop up in the course of implementing a decision which were difficult to foresee by the logical methods. External factors affecting the unit being managed also appear which were likewise difficult to predict. Many decisions which have a positive effect in some sections of the unit may adversely affect other sections. Model-building can be of tremendous help to the manager in taking all these factors into account and in deciding the force of their impact. Dynamic model-building is one such method of using models.

Building a dynamic model of an enterprise entails constructing a mathematical model of an enterprise's operations, in which it is possible to trace through any changes occurring in the unit being managed under the impact both of measures foreseen in the management process and of independently occurring external and internal factors.

Dynamic model-building helps to solve the problems confronting the system being managed and to establish factors which probably interact when observable symptoms are present. The chains of cause-and-effect, linking decisions and actions with the resulting changes in the work of the organisation, begin to emerge in the process, and these relationships are given quantitative expression. The system comprising these relationships and their quantitative expression form a mathematical model of management. Its construction is a complex and big task. It has proved a good idea to construct several typical models and to adapt one of them to the needs of a particular enterprise with a view to making this work easier.

Economic-mathematical model-building consists in organising information about actual processes occurring in a particular system and conveying this information in exact quantitative terms—as formulas, graphs, tables or diagrams.

In order to establish the aim and the objectivity criteria for a particular economic system (an enterprise), it is necessary to have a model of a higher system (sectors+consumers). That is how a system of models and their hierarchy is set up.

Matrix models which combine mathematical expressions with a visual display of the interrelationships between different sections of the plan (or the accounts) of an enterprise, association or other organisation are often used in economic modelling. In such a matrix model production capacities, labour and material resources, and technological standards as well as the volume of output, expenditure on materials and labour over a certain period, are expressed by the intensity of use of material and labour resources.

A matrix model can be effectively used to reveal the interrelationships between different aspects of enterprise or association operations arising as a result of carrying out some managerial decision.

Once the mathematical model has been set up, trial calculations are made, usually with the use of computers, in order to check to what extent the model approximates to reality, and the model is corrected in keeping with the results of the comparative analysis that is made. Corrections may be made in two different ways—either the model is altered, if it does not correspond to reality, or the organisational relationships and decision-making regulations are changed, if the model has shown them to be incorrect.

Who should make a particular decision and at what level depends on the prerogatives existing in the managerial set-up in different departments. If a particular area of work falls within the competence of a functional department whose job it is simply to prepare decisions, then the act of decision-making rests on whoever is directly in charge of the department and on the production unit to which the particular instructions refer.

Different levels of management make different kinds of decisions. The closer a manager is to production and the more he operates on a small scale, the greater the number of operational decisions he has to take, the more modest their scale, and the more specific they are. A foreman working on the shop-floor rarely has to concern himself with long-term problems. Although he cannot organise his section properly unless they have been worked out by someone else, he himself spends most of his time and efforts on the operational management of his section. His day-to-day aim is to fulfil the monthly plan, and he issues his instructions to each individual operative.

The minister responsible for a whole branch of industry is mainly kept busy with deciding the most effective lines of development for the branch as a whole, with the nature of the new techniques and technology that are being applied and developed and the new types of output that are being introduced, with determining the size of the market, with growth trends in sectors consuming the output of his own particular industry, with the opportunities for developing trade on the world market, and with much else.

In the course of his work it is extremely important for a manager to interpret the previously established aim critically and if necessary redefine it.

The direction of a manager's work is determined by a number of factors. External factors such as assignments set by leading organisations, changing conditions affecting supplies and sales, new technological and organisational solutions obtained by project-planning and research organisations are of considerable importance. Internal factors, too, such as the discovery of new production reserves that come to light, any complications that arise, personnel changes, and many others have an effect on managerial behaviour.

Some factors require individual, partial changes in the course of production and current adjustments. These changes can be made in the course of operational management, while others demand new or amended tactical solutions. Some circumstances can cause alterations to be made in both the final aim and the strategy adopted by management. A manager should keep all these possibilities in mind so as not to be a captive of his own previous decisions.

The frequency with which decisions are taken is also rather important. It is usually different for measures of different scale. Operational decisions should be taken in the shortest possible time. If the head of a dispatch unit at an electricity station receives a signal that some generating plant has cut out, he has immediately to take a decision about which stand-by plant to switch on or where to transfer the load. Here any delay is impermissible. If the foreman of a machine shop finds that a lathe has broken down, he finds out what work-load had been assigned to the lathe and how urgent it was, and how loaded up the other lathes are and then, together with the dispatch department head, decides where to transfer the work that has not been done. In this case the time limit for taking a decision is fixed by the technological features of that particular section.

When it is a matter of taking strategic decisions, however, then haste is impermissible. In this instance all the circumstances affecting production at the present time and which may arise at some future date should be carefully weighed up. Additional information must be obtained, and in a number of cases it is necessary to carry out special research. In this way not only the final outcome but also the means of achieving it are determined. Obviously, in his work of preparing strategic decisions, a manager should define the content and draw up schedules of the work to be done in connection with the decision-making process.

While carrying out a decision, one must turn back to an evaluation of its effectiveness. In view of the still imperfect methodology for determining the effectiveness of various measures, the poor validity of data regarding the effectiveness of standards taken as a basis for calculation and the possible difference in the actual volume of work involved in implementing decisions compared with the estimated volume, it may happen that a decision taken some time ago and apparently proving to be a correct one in the course of implementation, turns out to be its opposite.

In drawing up a programme of activity, a manager usually lays down the means for checking on its implementation and gives careful thought to the frequency of checking operations and their content. Control is exercised in three directions: regarding implementation of the aim that has been set; regarding implementation of particular measures constituting stages in the attainment of this aim; and regarding ways of achieving the previously-fixed effectiveness of decisions. The means and forms of control are also laid down, of course—reports, operational information, automatic signalling, etc.

3. COMPILING AN ORGANISATIONAL PLAN

Definition of the aim is still not sufficient for good management. Preliminary discussion of the aim by all concerned already provides some kind of preparation for working to achieve it, and changes the aim into a direction of work. Next, it is necessary to give this aim concrete expression in time and space. This means that the overall end-result we are striving for should be broken down into more limited tasks that can be tackled in shorter periods of time and that these limited periods should be fixed. In addition, the task before, let us say, an enterprise taken as a whole should be put in concrete terms for different production departments and levels of management. Moreover, every effort should be made to ensure that everyone working in a department clearly understands the overall aim and his own role in achieving it. The exceptional importance of combining both the above elements—understanding of the overall aim and the individual's role in achieving it—needs to be emphasised. These are two inseparable links without which the aim cannot be achieved. If those concerned understand only the general task and do not understand their own role in tackling it, their activity will not be as goal-directed as it should be. If they have a limited task put before them and do not understand what kind of overall results the whole organisation is striving for, their activity will likewise be insufficiently goal-directed.

In the course of further elaboration, the task is broken down into greater detail and, as this happens, an assignment is fixed for each individual worker. Thus, it becomes possible to compile a plan for tackling a task which shows who should take part in tackling it, what he should do, and when some job or other should be completed.

After this has been done, the external factors affecting work on the task are established: what kind of project-planning materials are needed, when, and from whom; what kind of research should be done in the course of work on this task; what kind of building and repair work should be carried out and who should do them. The sources of supply and delivery dates for new plant, materials, and tools as well as the training and retraining of leading workers capable of carrying out the task and working successfully in new conditions after it has been completed must also be laid down. A kind of enlarged network or chart is drawn of all the activities and events connected with doing the task. Use of such charts is pretty effective.

In achieving the aim each section of work should be given a proper degree of independence in choosing the methods and ways of doing so. However this does not, of course, mean giving up current management and refusing to give operatives the help they need. This help consists above all in drawing up an organisational plan of measures for achieving the aim that has been set.

This plan comprises:

1. definition of the overall aim of the enterprise and the specific aims stemming from it for each department;
2. choice of methods for achieving the aim;
3. setting the most suitable pace for the particular circumstances;

4. confirming the kind of staff needed to do this work;
5. ascertaining what material resources are required;
6. fixing time-limits for the work as a whole and for its different sections;
7. working out ways of checking on the course of work on the task.

Every manager, no matter at what level of the hierarchy he finds himself, should bear in mind that his work necessarily comprises forecasting, organisation, administration, co-ordination and control. This means, first and foremost, the need to work with a perspective in view, to regard each decision as a step towards achieving the overall aim of the enterprise. This aim should be achieved in an organised fashion, that is, the structure of production and management should be defined and the way their work is combined should be laid down. Administration includes settling who should do what, and when, in order to achieve the aim. Co-ordination implies the current dovetailing of activity by all sections taking part in achieving the aim. Finally control assumes checking that all the measures outlined have been carried out.

Different variants for fixing the various stages of work and their completion dates and establishing the range of skills and deployment of people taking part in the work are feasible in devising and drawing up an organisational plan.

The best of all possible variants should be chosen. In doing this, a check is first of all made as to the possibility of redefining the aim itself and giving it a longer perspective. Next, the possibility of achieving it within a shorter time-limit and at less cost is tested, and then the different variants for placing people, utilising material and financial resources, etc., are tried out.

In drawing up such an organisational plan, a manager may discover that he has not enough funds or manpower to tackle all the more limited tasks connected with achieving the overall aim. In this case it is extremely important to choose the main direction of work in order to concentrate the main efforts there. This selection of key, decisive sections is a good idea. Only it is important that the section chosen to be the main one really is the main one.

The critical path method* using network charts of management and planning is akin to the method of selecting leading sections.

Every manager should make sure that the plan makes provisions for all the work that has to be done to achieve the aim, that each operative understands the content of his job and the amount of work he has to do and that he is convinced of the need for those measures which he must carry out in order to achieve the overall aim.

An indispensable element of the organisational plan is the setting of execution dates for all its assignments. To prevent a dangerous overstrain of the personnel and not to undermine his authority an executive must carefully consider the time needed for carrying out his every order and not to set unreal dates. But well-planned periods must be undeviatingly observed.

4. SELECTION AND PLACING OF PERSONNEL

The selection, placing and training of leading workers for each section of production and the job of managing them is the next, very responsible stage in the work of a manager. A manager's business capabilities are shown in his ability to choose good people to assist him. Any desire on his part to take everything into his own hands and cover all aspects of production inevitably leads to him wasting his efforts on trivia, losing all sense of perspective, and changing from an organiser into a simple recorder of facts. Consequently, he should know how to delegate work and how to select conscientious, competent workers capable of initiative so as to be able to trust them.

The Leninst principle of selecting personnel in accordance with their working ability and their political qualities is well-known and has been actively put into practice for many years now. It is essential in this case to be certain that the worker who has been transferred to a new job or given a new task is capable of coping with it. In order to assess the qualifications and organisational abilities of a particular worker, it is a good idea to adopt a system whereby individual workers are asked for their views on the organisation and methods of carrying out a particular piece of work. These views may be either written down or given in the course of an interview with the worker, but in either case it should be possible to judge the extent to which the worker has understood the task and how he would organise the way it should be tackled.

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* By critical path is meant that combination of activities in a network whose solution requires the maximum time and thus determines the overall completion date of the work as a whole.

A manager undertakes to prepare and carry through a job: he gives careful thought to its aim, and outlines the measures needed to achieve it; he analyses the work done at the enterprise, finds out the weak spots and proposes to his assistants what adjustments need to be made in their work; he studies the best experience available with a view to making it more widely known; and he works out the following stages in the job.

If the management of industrial production is properly organised, each worker should know exactly what his rights, duties and responsibilities are. As production develops and conditions alter, these rights and duties may change too, but they should be clearly defined at any given moment. Each worker should also be given the powers he needs for carrying out his responsibilities.

Usually account is taken, in selecting and placing managerial staff, of how people have proved themselves in previous jobs. This is an important consideration. At the same time attention is given to picking a good team from those having previous experience and theoretical training. Usually there are a number of candidatures and the best are selected by a competent body. Candidates for a senior post are asked how they would deal with a specially-devised "situation" related to their future job. Their solution is assessed according to its effectiveness, analytical method, logicality, the ability to back up their solution with valid arguments and other factors indicating the person's ability to do work connected with his future post.

The trainee system adopted in certain organisations has also proved itself in practice. The "trainees" are people who, while doing their own job, are from time to time given jobs to do connected with higher-level management so that they can replace a senior official when the time comes for him to be promoted to other work or go on pension.

Experience has shown that it is good practice to periodically reassess the proficiency of leading executives and members of the managerial staff with regard to their working and political abilities, the operational results obtained by departments under their supervision, and their knowledge of management and the organisation of management work.

It is extremely important in choosing managers for particular units and departments to consider carefully at the same time how far the organisational structure of management corresponds to the tasks facing it.

The art of being a manager also includes the ability to sense the need for organisational changes and carry them out in good time. He can be actively helped in this by organisation-and-method experts working, either individually or in small groups, at a number of ministries and at enterprises as managerial consultants.

In order that the managerial staff be able to give the necessary support to a manager and respond to the work he has to do, his colleagues should possess a certain amount of know-how and practical skills. Theoretical training plays an important part in raising the efficiency of management, but fast-changing production conditions demand changes in the form and methods of management, and for this reason a systematic increase in skills is required. Changes in the system of documentation and the structure of management, and the automation of certain parts of the work process make it necessary to retrain workers. The duration and content of training changes according to the nature of changes occurring in the management system.

5. ESTABLISHING CREATIVE WORKING CONDITIONS AT AN ENTERPRISE

Decision-making is a very important part of management. Work without an aim cannot be managed. Nevertheless decisions alone, even very good ones, cannot ensure success. It is extremely important for the whole of the labour force at an enterprise to have an interest in carrying out decisions once taken and for every worker to regard this as his own personal affair.

Managerial activity makes a decisive impact on the work of the enterprise. In his report to the Plenary Meeting of the Soviet Communist Party in September 1965, Alexei Kosygin, the Soviet Prime Minister, pointed out: "The demands on our industrial and managing personnel are substantially growing. They are advanced by life itself. Initiative based upon competence, ability to take quick decisions, a businesslike approach, a sense of the new, an ability to make the maximum use of production resources in each concrete situation—such in essence are the new demands. With the expansion of their powers, the leading personnel in the economy will bear greater responsibility to the Party and the state. They and their staffs will themselves have to solve problems which frequently were worked out for them by their superiors."*

Sometimes top-level organisations have to take a decision to strengthen management at some enterprise or production shop, that is, replace the manager. The appointment of a new person quite often leads to a significant improvement in the work of the whole enterprise or shop, even though the same workers and the same machinery remain there.

What is the "secret" of the new, "more forceful" manager? Obviously it is that he has been able to make better use of those possibilities which existed at the enterprise even before he came, to discover hidden reserves, and to mobilise the entire labour force to carry out the production plan. The basic requirement in any manager is to know how to work with the rest of the staff.

It is tremendously important to establish a creative environment and to make sure that each worker has a clear understanding of the tasks confronting him and of his role in the general development of production in order to ensure that every member of staff works fruitfully. Exercising systematic control over the implementation of a task and informing workers of the progress being made is of great help in this respect.

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* *New Methods of Economic Management in the USSR*, Moscow, 1965, pp. 55-6 (in Russian).

Help and advice are similarly important elements in management just as are decision-making, decision-checking, and responsibility for the results of work done.

Sergo Orjonikidze, who was one of the most brilliant organisers of socialist production in the Soviet Union, used frequently to send leading officials from the Supreme Economic Council and the central administrative departments of ministries out into the factories with instructions to help enterprise managers directly on the spot to sort out a difficult situation and teach them a correct way of working.

A skilled manager often seeks advice from its subordinates. One of his most important characteristics is a respectful attitude to his colleagues' work results and a thoughtful approach to any documents they have drawn up. Among the qualities a good manager should possess are self-discipline, energy, persistence, the ability to take decisions independently, and the ability to respond correctly to any critical comments addressed to him. He should also be a good psychologist and should serve as an example to other workers.

In currect management it is extremely important to achieve a correct combination of administrative measures and measures to win conviction and make workers personally interested in raising the level of their activity. As already noted, three different types of management methods are used in managerial practice—organisational, educational, and economic. Whereas economic methods are based on a combination of the interests of society, the enterprise work force and the individual worker with the main stress on the interests of society, educational methods are aimed at helping the workers and creating a good morale among them for the sake of efficient work. The provision of moral and material incentives is also of some considerable importance in this method of work. This includes the bonus system for which different sources of funds are used—the enterprise fund for providing material incentives, the distribution of benefits paid for out of the housing and social and cultural amenities funds, the awarding of bonuses in accordance with the results of socialist emulation, awards for rationalisation proposals and inventions, etc.

Moral stimuli of good work include the award of the title of a "Communist Labour Worker" or a "Communist

Labour Collective", the presentation of Challenge Red Banners and the placing of the photographs of front rankers on the Board of Honour.

This system of providing material and moral incentives is an important factor in establishing a creative atmosphere at work. It should be directly linked to operational results, be the inevitable consequence of achieving certain results, and be arranged in such a way that it is clear to everyone why a measure to encourage some worker or other has been taken.

CHAPTER 5

THE CONTENT OF PLANNING WORK IN INDUSTRY

1. THE SYSTEM OF DEVELOPMENT PLANS FOR INDUSTRY AND THE MAIN DEMANDS MADE ON THEM

Industry and its various branches, associations and enterprises can only be developed, and scientific and technological progress implemented, on a long-term basis. The construction of new enterprises and industrial complexes and their re-equipment, the development and application of new technology, and the mastering of new production become effective only when they take into account the long-term prospects for economic development, scientific and technological progress, and social needs. This proposition was first put forward by Lenin, who even in the early years of building socialism and during the Civil War and military intervention stressed the need to draw up a perspective plan and himself headed the work on compiling the GOELRO plan for electrification—the first long-term, economic development plan.

Industrial development takes place in accordance with long-term, current and operational plans. Long-term plans occupy a central position in this planning system, especially in industry and its various branches and associations.

In view of the decisive importance of these plans to economic development, the 24th Congress of the Soviet Communist Party stated in the Directives on the Five-Year Plan: "Guided by the targets of the five-year national economic development plan of the USSR for 1971-75, enterprises and collective farms shall draw up their own five-year plans that will ensure attainment of the planned targets with the least input of labour and material resources."*

The progress made in implementing long-term and annual plans forms the criterion for evaluating the activity of associations and whole branches of industry. Such an approach helps enterprise complexes to get their bearings in tackling major strategical tasks of industrial development.

In the light of the tasks of building communism, long-term plans determine the direction, pace and structure of development over the long term in the economy as a whole, in particular sectors, economic regions, associations and each individual enterprise. They establish the way forward for scientific and technological progress and decide questions regarding the construction and reconstruction of enterprises. They are drawn up in such a way that each particular assignment is allocated to a particular year. Plans for reconstructing enterprises and mastering new types of output which cover a number of years are also to be regarded as long-term plans.

A long-term plan for an industry or association fixes:

1) the specialisation of that industry and each industrial complex, taking into account changes in demand for output in the economy and the output for scientific and technological progress;

2) changes in the structure of an industry or association—the structure of production and of the research, project-planning and other organisations belonging to it and their respective importance—under the impact of changes in their co-ordinating links and in scientific and technological progress;

3) the main directions of scientific and technological progress, particularly in regard to mastering new types of output, working out and applying new production methods, machinery, organisation of production, work, and management, including related investments;

4) improvements in the social and cultural level of the working people and in their housing and general living conditions.

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* *24th Congress of the CPSU*, p. 318.

If there is to be an improvement in the efficiency of socialist production, then plans for the development of industry must be compiled in such a way as to ensure: the proportional development of all branches of industry and the maintenance of a correct relationship between industry and other sectors of the economy; the priority development of progressive branches of industry and types of output; the concentration of capital investments and material resources on ongoing projects with a view to bringing them on stream in as short a time as possible; the full use of available resources and the faster application of scientific and technological achievements to production.

Current plans determine the development of industry and its different branches for a period of a year. They are compiled on the basis of the long-term plan but take into account the progress being made in implementing it, any additional requirements that may arise, and the latest achievements in science and technology.

Operational planning and regulation of production also form an important part in the industrial planning system. The aim here is to ensure that the state plan is implemented. The progress being made in implementing it and the commitments entered into by workers at the various enterprises are here taken into account.

The main requirements in drawing up a plan are: the smooth implementation of technological progress and on this basis an increase in labour productivity; and establishment of the most favourable conditions for the development of progressive branches and sections of production. A most important requirement is to adopt a macroeconomic approach to the allocation of materials, technical equipment and financial resources that coincides with the demands of the national economy.

The plans are scientific above all because they are based on a system of progressive technical-economic rates. This means that the standards set for the unit expenditure of materials, fuel and electric power, and labour inputs should be technically valid, worked out on the basis of applying advanced technology, and geared to advanced methods of organising production and work. The quality of plans depends, in the first place, on the quality of technical-economic standards.

Work on drawing up plans starts with deciding the most important lines of development in the technology and organisation of production. Actual organisational and technological measures are then worked out along these lines.

One of the most important requirements of any plan is for it to be able to maintain a complex balance. This means that all its different sections and indices should be tightly interconnected. For example, any change in the indicator of labour productivity affects the prime costs of production and profitability; necessitates taking appropriate measures to develop the technology and organisation of production; and may make it necessary to install extra equipment in order to mechanise the production processes, etc. The quality of a plan consists not only in making correct calculations and balancing all its different sections, which by themselves are very important, but also in selecting the best solutions. Plan optimisation is regarded nowadays as one of the most vital tasks confronting the planners.

Active participation by scientists and technical experts, and by Communist Party, trade-union and Young Communist League organisations is the chief guarantee of compiling scientifically-valid plans which make the fullest use of production facilities.

Plans determine the direction, pace and structure of economic development.

In a socialist economy each branch of industry, subbranch, association and enterprise forms an integral part of the economy and is organised so as to ensure that the needs of society defined in the plan are met to the fullest extent possible. In order to organise this work, the state assigns tasks to a ministry responsible for a particular branch of industry, which in turn re-assigns them to lower-level organisations in its industry, and establishes the conditions in which these tasks can be completed.

The state plan fixes the range and quantity of goods needed by the economy. The target for centrally-planned output is usually specified in aggregate terms. This enables managers at industry and enterprise level to decide for themselves the detailed list of goods in consultation with their customers. This is the correct procedure in the majority of cases except for certain exceptionally important types of output whose production must be regulated to ensure fully guaranteed supplies to the economy.

Industries and associations may accept extra orders, over and above those laid down in directives, so long as this does not give rise to any above-plan demand for centrally-planned materials in short supply.

The state plan also fixes the amount of profit for each industry and enterprise and the targets for raising labour productivity.

In regulating relations between industry and the state, the national plan fixes a ceiling on centralised investments, the use of different types of materials in short supply (in aggregate terms), and the total wages bill.

With regard to relations between enterprises and ministries, the range of planning indices is somewhat larger. Plans handed down by a ministry to associations and enterprises lay down not only the indicators mentioned above but also targets concerning the mastering of new output and the application of new technology.

2. THE MAIN SECTIONS AND INDICATORS IN AN INDUSTRIAL DEVELOPMENT PLAN

A plan for developing industry comprises: a plan for the production and sale of industrial output (a production programme); a plan for developing the technology and organisation of production; a plan for construction and the commissioning of new productive assets; a plan for employment and wages; a plan for material and technical equipment supplies; a plan for utilising production capacities; a plan for the cultural and social development of production workers; a plan for increasing profitability and lowering production costs; and a financial plan.

The *production programme* which fixes output and sales targets forms the central section of the industrial development plan. It sets the targets for all branches of industry, economic regions, and enterprises regarding volume of sales and the quantity and range of the main types of output. It gives special prominence to assignments for introducing new types of goods, broadening the range of output, and improving its quality.

The production programme makes provision for the specialisation of enterprises and the development of co-operation between them. It establishes intra- and inter-industry relationships. It constitutes that section of the plan that is used for determining the demand for manpower and material resources. It has a considerable effect on plans for technological development and the production of basic producer goods, on the profitability of production and on finances.

Scientific and technological progress lays the basis for the development of socialist production. This determines the need to draw up *a plan for the development and application of new technology and for improving the organisation of production and management.* It comprises a series of measures for increasing labour productivity, obtaining savings in materials, making better use of advanced technology, and producing new types of output and intensifying production. It lays down the main directions of technological progress in each branch of industry. It sets targets for the mechanisation and automation of production, for increasing the power available per worker, modernising available equipment, using advanced technology, applying new and making more intensive use of existing technological processes, and introducing a more rational organisation of production, as well as targets for designing and producing new machinery, plant and materials. The programme for mastering the production of new types of consumer goods forms an important part of the plan for scientific and technological progress. This section lays down the amount of expenditure on implementing organisational and technical measures, their sources of finance and their economic effectiveness. *The scientific-research plan* constitutes a major, independent section of the industrial development plan.

Capital investments in industry are divided between the construction of new, and the expansion and reconstruction of existing enterprises. *The plan for capital construction* fixes the volume of capital works and capital investments for each branch of industry and economic region, and allocates investments to each job of construction or reconstruction. It fixes the target for bringing capacities on stream, lowering construction costs, and increasing productivity in the construction industry.

The *plan for labour and wages* fixes the targets for an increase in labour productivity, number of personnel, and wages. It also makes provision for training and improving the qualifications of workers. It is closely related to the production programme, and to the plan concerning production costs and the financial plan.

The *plan for material and technical equipment supplies* establishes industry's demand for basic and ancillary materials, fuel and power, fixes targets for making savings in them, and lays down the sources of supply for obtaining materials and technical equipment.

The *plan for utilising production capacities* determines the size of both new and written-off capacities and fixes the target for using capacities.

The *plan for social and cultural development* and the provision of welfare services (the social development plan) is a major new section of the industrial development plan.

This plan usually incorporates measures to train and improve the qualifications of workers, to provide cultural facilities, and to create the right conditions for stimulating workers' cultural and technical abilities; measures for improving workers' health, including the construction and expansion of sports facilities, polyclinics, hospitals, sanatoria, etc.; the construction and amenisation of housing estates; and measures for improving the aesthetic designs of industrial establishments and individual work-places.

The final section which sums everything up is given over to the *plan regarding profitability and costs*. It includes a target for total profits and the rate of profit, as well as cost indicators.

The financial indicators for industry are included in *the financial plan*. This fixes targets for increasing the velocity of turnover of circulating assets and increasing profitability, and for creating and using production assets; it also incorporates the credit plan for industry.

3. THE SYSTEM OF PLAN INDICATORS

The aim of socialist production is to satisfy the needs of society as fully as possible. The use of labour-saving methods and an increase in labour productivity are vital criteria of the efficiency of socialist production.

There is no need to explain the importance of such yardsticks as profit or profitability which gives the ratio of total profits to the value of fixed production and rated circulating assets. An increase in profitability constitutes a source for replenishing state budgetary funds, setting up incentives funds at enterprises and, thereby, providing a source of funds for developing production at existing enterprises, improving the worker's material living conditions, and housing and other social amenities.

Other yardsticks are used, besides profits and profitability, which directly measure the extent to which the vital task of socialist production has been implemented. One such indicator is the return on assets which measures the ratio between the value of output and the value of production assets. Borrowed funds are included in the total as well as the enterprise's own fixed and circulating assets, since the state includes in the estimate all funds allocated by industry regardless of their source.

This indicator is one of the main ones for evaluating production efficiency since it gives the most accurate account of how successfully the particular aim of production has been accomplished. Evaluating the activity of industrial enterprises in accordance with the return on assets, that is, embodied labour, naturally does not mean any slackening of attention to the productivity of living labour, an increase in which is one of the main indicators of production efficiency.

The *main indicators for the production programme* are: saleable output in physical terms; gross output in comparable prices; and output sold in current factory prices. The production programme also shows the output target from the point of view of co-ordinating production by different enterprises. The share of output contributed by enterprises in a particular industry which specialise in its production is singled out in the programme in order to show the level of enterprise specialisation. The volume of work done in order to satisfy workers' needs is shown by the share of goods for cultural and domestic use. The quality of output is indicated by the relative share of different grades of output (in those branches of industry where output is graded), by the amount of useful matter in completed output (in certain branches of the chemical industry), by a mark of origin (cement, bricks, etc.) or by the reliability and durability of goods.

The *plan for developing the technology and organisation of production* uses the following indicators: a physical target for mastering new types of output; a coefficient of mechanisation and automation; the amount of machinery to be modernised; the relative share of progressive production methods (according to the quantity of output produced by these methods); the amount of power available per worker; the amount of output per unit of fixed and circulating assets in value terms; etc.

The *plan for capital construction* singles out the following indicators: a target for commissioning production capacities and fixed assets; the volume of capital works to be carried out, together with an indication of their trends; a ceiling on capital investments; and a target for expanding and reconstructing enterprises.

The *plan for labour and wages* shows: the production of gross output in comparable prices per worker; the total wages bill including members of staff in industry; and the total number of workers, including staff.

The *plan for material and technical equipment supplies includes*: the quantity of materials, and semi-finished goods allocated to an industry or enterprise; and a target for achieving savings in the use of materials.

The *plan for profitability and costs* is summed up by the following indicators: absolute profits and profitability; the volume of expenditure on gross output; the prime costs of all commodity output; the prime costs of different types of output; expenditure per ruble of commodity output in current factory prices, or a target for lowering the prime costs of comparable commodity output.

The *financial plan* includes the following indicators: a target for total accumulation; a ceiling on circulating funds and their velocity; and the final balance of income and expenditure.

The above list of indicators should be regarded as an example only. The need arises in a number of industries for additional technical-economic indicators.

4. MOBILISING LATENT PRODUCTION FACILITIES—A VITAL TASK IN THE INDUSTRIAL PLAN

An industrial production plan takes into account what use can be made of latent production facilities available at every enterprise and in the industry as a whole.

Latent production facilities provide the opportunity to make still better use of resources by improving the technology and organisation of production and by eliminating losses.

Depending on the type of resources whose use an enterprise is trying to improve, the following types of reserves should be distinguished: a) those for increasing production capacity and making better use of it; b) those for saving working time; c) those for saving materials, fuel and power; d) those for general production; and e) non-production reserves in respect of completed output.

The first three groups stem from the three factors in the work process characteristic of the production process. Among them are general latent production facilities connected with the organisation of the production process at an enterprise and throughout the whole branch of industry. These include: a reduction in the length of the production cycle; and a reduction in stocks of work-in-progress and in surplus stocks of materials, fuel and ready-made goods.

Non-production reserves include the possibilities of improving the use of production resources as a result of non-production factors (organisation of supplies and sales, the work of financial bodies, etc.).

Reserves with regard to completed output include the possibilities of improving its quality and thus achieving savings in the production of output and its consumption.

All these latent production facilities can be ascertained as a result of a technical-economic analysis of production using the following basic methods: comparative evaluation, disaggregation, substitution, selection of key sectors, determining the causal relationship between variables, and the dynamic method. The technical-economic indicators of similar-type enterprises are frequently compared for purposes of analysis. Correlation analysis, mathematical model-building and other economic-mathematical methods can be used to great effect in ascertaining what reserves exist.

It is usual to compare an industry or enterprise's operational results with the plan for the current period, with the plan and the reports for the preceding period, with the best results obtained at given periods, with the results achieved in leading sectors in a given period, with the indicators of similar-type leading enterprises, and with the best indicators set by similar industries in the Soviet Union and abroad. These comparisons make it possible to evaluate operational results correctly and to determine the extent of the reserves which can and should be used and brought into action in future work.

Besides past records, use can also be made of current accounts and technical documents in analysing production. Personal observation suggestions made by workers, engineers and office staff at production conferences and workers' meetings and in the course of conducting work reviews, rationalisation proposals, customers' complaints, etc., can all be of use in searching out any new reserves in production. It all helps to disclose any shortcomings in work and to disseminate the experience of leading workers. The results achieved in ascertaining latent production facilities are taken into account in drawing up the next plan.

5. PROGRESSIVE TECHNICAL-ECONOMIC RATES—THE BASIS OF CALCULATION FOR PLANS

An industrial plan is worked out on the basis of progressive technical-economic rates. *Progressive technical-economic rates* are planned quantities fixing the maximum allowable expenditure of labour (living and materialised, manpower and machinery) per unit of output over a particular period of time. The level of the technology and organisation of production, advanced production experience and the possibilities for making it as widely known as possible, and the latest scientific and technological findings are all taken into account in drawing up these rates, which reflect the effectiveness of measures to improve the organisation and technology of production and to mobilise latent production facilities.

Progressive technical-economic rates are a means for developing industry on a scientific basis; they help to spread information about advanced production experience and bring those lagging behind up to the level of leading workers, to improve technology and make better use of it, and to mobilise latent production facilities.

Advanced technical-economic rates stimulate technical progress and an increase in profitability. The rates form the basis for paying wages. Rates help in planning production, distribution and consumption of the social product, in establishing the structural development of different branches of industry, and in exercising control over the use of productive resources.

The *general level of rates* depends on the stage of development of technology and the extent to which it has been mastered, and the degree of organisation of work reached by skilled workers with a conscientious attitude to work. The more highly developed and the more perfectly mastered the technology of production, the more skilled and conscientious the leading workers, the more economically are production resources used.

A series of rates constituting a well-defined, interconnected system embracing all elements in the production process is being established for planning work in industry. Technical-economic rates that have been established in industry can be systematised into the following main groups:

1. *Work rates* which include: rated working time per unit of output or rated output per unit of time; an analysis of working time; and ratings. These rates determine the productivity of labour and the use of working time and provide data for fixing the amount of wages.

2. *Rates regarding the use of equipment* (machinery and tools), which include: rates regarding the use of machinery, mechanical equipment and installations; rate rules for operating machinery; rated outlay on tools and other accessories.

3. *Rates regarding the use of raw and other materials, fuel and electric power.* These include: rated ratios regarding outlays on raw and auxiliary materials, fuel and electric

power; and standard costs connected with procuring and transporting raw and other industrial materials, and fuel. These rates determine the efficiency with which raw materials and power resources are used and provide the basis for determining the prime costs of production.

4. *Rates regarding organisation of the production process.* This group includes: rated duration of the production cycle; rated volume of work-in-progress; rated stocks of raw and other industrial materials, and fuel. These determine the velocity of assets turnover in industry, the rational organisation of the production process and the extent to which advanced methods of organising production have been applied.

All technical-economic rates are closely dovetailed throughout industry.

Analytical calculations are made in order to fix progressive technical-economic rates, which are founded on advanced production experience in the economic use of resources. In fixing the rate for expenditure of basic materials using this method, many enterprises study the design of manufactured goods in order to find ways of reducing expenditure of materials; ways of obtaining savings emerge at all stages of design and production and organisational and technical measures are then worked out which aim at saving materials and, if they prove efficient, rates are laid down regarding the expenditure of materials.

In order to fix rated working time, an operation is broken down into elements; a study is made of the organisation of work and the technological regulations applied in performing each element, while at the same time the amount of time spent in performing each element of the operation in different circumstances is fixed; the most rational methods of doing the work are selected; measures which assist in applying them are decided on, and rates are set with regard for the effectiveness of these methods. Similar work is done in working out other progressive standards.

Many branches of industry issue their own handbook of rates for standard goods and typical technological processes, which are widely used in establishing technical-economic rates. Aggregated rates are used in the economic management of industry as a whole and its different branches.

6. SOME FUTURE LINES OF WORK TO IMPROVE PLANNING

During the recent years of building socialism in the Soviet Union and other socialist countries, extensive and valuable experience has been gained in planning industrial production, whole branches of industry and regional complexes. The present level of industrial production and methods of running the economy are making a number of new demands on the planning system.

Let us look at some of these. We have noted that the state plans determine the direction, pace and proportions of development throughout the economy, its different sectors, regional complexes, associations and enterprises. Structural changes of proportions depend on what tasks are being tackled in any particular period of time, on the installation of new production capacities in different sectors and regions and the speed with which they are brought on stream, on changes in qualitative indicators in particular industries, and on many other factors.

A great deal of work is being done on drawing up intersectoral balances in order to avoid any disproportions arising in the economy. It is necessary in doing this to create certain reserve capacity in order to maintain the necessary dynamic proportions in the economy. This is connected with the need to ensure that some branches of industry can go ahead faster than others.

At the same time it is correct to extend work on compiling not only planning but also actual intersectoral balances and not only for the whole economy but also for separate regions and branches of industry.

Whereas at the level of a major economic region or branch of industry plans are drawn up with a fair degree of precision, at the level of an enterprise or association plan assignments often reveal a varying degree of tautness. The situation sometimes arises when the plan is completed by various enterprises and associations only because emergency measures have had to be taken.

Both managers and economists are involved in seeing that planning assignments of equal tautness are set, and the basis on which this is done is by using the technical-economic rates for their particular industry. To begin with, some enterprises are set a target of reaching these rates, while others are set the task of overreaching them. In every case these rates serve as an objective basis for drawing up plans for different enterprises and ensure that the level of work in lagging sections of production are brought closer to the average.

The need to make the system of planning and accounting indicators more accurate is a special problem which must be tackled in the course of work on improving planning.

CHAPTER 6

ORGANISING THE IMPLEMENTATION OF PLAN ASSIGNMENTS

1. A GENERAL DESCRIPTION OF MANAGEMENT METHODS

In the course of drawing up plans, industrial workers are set concrete aims which must be reached within definite time-limits. However, the setting of aims is only the first step in management. On the basis of the plans and in the course of carrying them out in all sections of industrial production, a great deal of creative work starts to develop comprising the coordination of activity in all those sections that are joined together by the flow of production; the regulation of their operations, taking into account the results that are being achieved; the control, evaluation and analysis of activity in each section; and the establishment of a system of material and moral incentives for groups of workers and individuals to encourage them to carry out plan assignments and thus improve production efficiency.

Various managerial methods are widely used in carrying out this work.

In his description of the methods used to influence production workers in different economic systems, Lenin wrote that feudalism retained power through the discipline of the stick, capitalism—through the discipline of hunger, while the conscious, creative discipline of workers, free from exploitation, who were the collective owners of the means of production, formed the basis of socialism. Of course, other methods are also used in any social system—feudalism was based on coercion but, although in a very restricted way, made use of economic and educative measures. Thus, the system of collecting regular rent in cash and in kind from peasants can serve as an example of an economic method of managing the economy under feudalism. The singling-out of overseers from among the mass of serfs, the freeing of some of them from certain compulsory services, and the granting of a certain amount of independence and freedom played a certain role, even at this stage of the development of industrial production. Capitalism is based on economic methods of motivating work, but makes wide use of coercive means and tries to apply moral incentives. Much more use is made of differentials between workers, a "labour aristocracy" is created, etc.

Socialism which is founded on social ownership of the means of production enjoys tremendous opportunities for using educational methods and moral incentives. Economic methods of managing the economy, which take into account the fact that the development of the productive forces decides the distribution of material goods and services in accordance with the amount of work done and that growth of output and increased efficiency is the main source for raising workers' living standards, are widely used in a socialist system. Naturally, even under socialism management presupposes a certain amount of coercion but its forms and methods are quite different. Moreover, unlike pre-socialist systems, coercion under socialism is applied to an extremely small minority of people who disrupt production and put a brake on its development.

In practice, organisational, educational and economic methods are used in managing industry.

2. EDUCATIONAL METHODS OF MANAGEMENT

A sense of comradeship and co-operation among socialist workers free from exploitation characterises the relations of production under socialism. They are based on social, largely state, ownership of the means of production. Every manager and every worker enjoys the same relationship to the means of production and is equally interested in developing and raising the efficiency of production. This has the result that socialist production is managed through the joint efforts of workers in the managing and the managed system. The difference between these two systems consists, not in the fact that one of them dictates to the other, but in the different tasks facing them.

The main task of the production system being managed is to manufacture output. At the same time the industrial labour force takes part in management through improving production, making rationalisation proposals, searching out latent production facilities, etc. Although this is not the basic function of the system being managed, it is still an important and developing one.

The main task confronting people working in management is to prepare, back up and take decisions affecting the economy. The subject of their labours is information which, when it has been processed and systematised, appears as the product of their labours. The object of their labours is the production work force. They have an indirect influence on production results.

In complex developed production, every single technological process should be worked out in an ideal form, that is, it is necessary to design the plant and machinery that will be needed, to determine the demand for materials and technical equipment, to carry out organisational and material preparations for production, and make calculations regarding efficiency. In practice, any change in the production process, that is, in the system being managed, starts with the managerial system taking a certain decision.

Thus, the process of management is not a monopoly of those employed in the managerial system but is carried out through the joint efforts of workers throughout production.

A vast experience of worker participation in management has been accumulated in the Soviet Union. Along with development of the productive forces, a rising level of mechanisation and automation in production, and an improvement in working conditions, there has been also an improvement in the general educational, cultural and vocational qualifications of workers, and their participation in management has become more active as a result.

At the present time socialist emulation is one of the most widespread forms of worker participation in management. It first started in the very early years of building socialism.

Its main feature is a concentration of effort on tackling the basic tasks of developing production.

A special drive was made in 1962 after the Soviet Communist Party's 22nd Congress, at which it adopted its new Programme, to encourage workers to adopt a communist attitude to work. The best are awarded the title of Communist shock-worker, work team and enterprise.

In the early years of the Ninth Five-Year Plan (1971-75) there was a widespread movement to take on individual socialist commitments, to draw up an individual five-year plan for particular work teams, or individual workers, engineers, technicians, and researchers, to draw up and adopt plans for making individual contributions to scientific and technical progress and to raise production efficiency.

In the course of socialist emulation, not only are production tasks tackled but substantial changes take place in the psychology of the workers. A sense of collective responsibility for work develops, there is an active exchange of experience, overall operational results become more important than individual productivity records, and workers learn to practise more than one trade. As the real masters of production, workers undertake, for example, to complete production projects at less cost than laid down in the plan. This is how work teams organised on a cost accounting basis came to be set up in the construction industry. Here, both the managing and the managed systems come together, and both workers and team leaders have begun to carry out the functions of production, organisation and control in this primary unit of production.

Communist Party organisations conduct educational work on a big scale, organising workers in a creative attitude to work, stimulating initiative, and developing criticism and self-criticism in a comprehensive manner. They make good use of the powers they have been given to check on the work of administration. They play an active part in helping managers select and place key personnel. They nominate workers for more senior managerial posts, help them get to gripe with their new duties, and establish a favourable creative environment at work.

The Young Communist League actively helps the Party in educating young workers in the right spirit. About half the industrial labour force is of an age to be eligible for membership of the Soviet YCL, which counts among its members actual and future skilled workers, engineers, foremen, and enterprise directors.

The largest mass organisations in the Soviet Union are the trade unions, which enjoy a considerable number of rights with regard to participation in production. No worker can be hired or fired, no fines can be imposed on workers, and no changes can be made in wage rates or output quotas without the consent of the trade-union organisation. They exercise control over the protection of health and safety at work. They also conclude collective agreements with the administration in which both parties undertake their respective commitments.

Scientific and technical societies and the various organisations for inventors and rationalisers work hard in helping to manage production and educate production workers. They organise various competitions, and scientific and technical conferences and meetings, arrange people's universities, and hold lectures, seminars and exhibitions at special centres for promoting technical knowledge.

Standing production conferences discuss urgent matters affecting production and make recommendations to the managers.

The entire work of these mass organisations is directed towards increasing efficiency and establishing conditions conducive to creative work, initiative, and a communist attitude to work. Their activities are really effective only if combined with the work done by the administration. A manager is responsible for actively educating the workers in the right spirit. He puts before the mass organisations tasks which must be tackled by the workers as a whole, organises discussions with them on current problems concerning the development of production, checks carefully to see that recommendations made by them are carried out and keeps the workers informed about progress in doing so.

3. ECONOMIC METHODS OF MANAGEMENT

Under socialism economic methods of management have an enormous influence on the development of production. Lenin noted that socialism should be built up "not directly relying on enthusiasm but aided by the enthusiasm engendered by the great revolution, and on a basis of personal interest, personal incentive and business principles. . . . "*

Economic management methods include various forms of individual material incentive and collective economic interest in the results of work in one or other section of the economy.

The organisation of wages is a basic method for providing material incentives. Wages form that part of the national income which is allocated to factory and office workers in money form and is their main source of income for keeping themselves housed, clothed, and fed. The main provisions regarding the organisation of wages (wage scales and rates, certain types of bonus scheme) are fixed at the national or industry level, but some are decided directly at enterprise level, and the right to do so, if used, can become an important means of stimulating an increase in production efficiency.

Special attention should be paid in organising wages to a correct choice of forms of payment, to pay differentials, and to working out valid rated unit labour costs.

The provision of production with technology is so great that it is possible to extend the use of collective forms of payment, and this, in turn, increases the collective responsibility of workers to each other and fosters the spirit of collectivism. Depending on the actual conditions prevailing in production, different systems of payment can be applied: for straightforward, unrestricted individual piece-work; for collective piece-work; payment on results, payment by the job, etc. An important method of encouraging better-quality work is to fix wages in accordance with skills.

Managers can make good use of bonus systems. Different kinds are used for stimulating an increase in the quality of output, devising and applying new technology, increasing labour productivity, etc. Let us look for a moment at the basic principles which underlie them. The first requirement of any bonus system is that all work that has a real effect on the operational efficiency of a particular section or sections ancillary to it, should have material incentives worked out for it. The profits made at an enterprise or the savings expected in a particular industry or ones ancillary to it should provide the source of funds for financing bonus schemes.

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* V. I. Lenin, *Collected Works*, Vol. 33, p. 58.

The material incentives fund is a substantial source of fund for these purposes: part of it earmarked for paying out bonuses to engineering and technical personnel, part for giving material assistance to workers in need, and part is held back for paying wages for the "thirteenth" month, if the enterprise's yearly results are good, and in the case of long-service workers. Thus, most of the fund is used up for paying individual bonuses. Besides providing incentives in accordance with the regular provisions in the various schemes, many enterprises adopt the practice of awarding bonuses for carrying out certain highly-responsible assignments connected with devising and applying new technology, setting up new lines of production, eliminating bottlenecks, etc.

The use of material incentive methods has a considerable effect in raising production efficiency and improving living standards.

4. ORGANISATIONAL METHODS OF MANAGEMENT

Organisational methods too are widely used in practice in managing enterprises. They include defining a precise structure for management and establishing the rights and duties of each worker; the selection and placement of personnel; the issuing of administrative instructions and checking to see they are carried out; and regulating the flow of production. Organisational methods are based on normative acts and laws and to a certain extent represent the concrete form taken by the legal principles guiding management.

The setting up of a carefully thought out and valid structure of management is an important condition of economic and efficient management.

Since management is closely connected to production, its structure and work content depend primarily on the requirements of production. In order to take these requirements into account, an assessment is made of the volume and content of information which production departments should transmit and receive. Thus, in designing the structure of managerial bodies at an enterprise, a study is made of the information fed in from the work-bench and a decision is taken for each type of information regarding the level to which it should be transmitted and who should take appropriate measures to deal with it.

Time-and-motion studies are made of different categories of worker in order to assess the workload of individual workers in management. In this way not only is any loss of working time ascertained, but the amount of time spent in doing work unsuited to a particular worker's qualifications can be discovered.

In this way the volume and content of work in different areas of management is ascertained, and on this basis a concrete structure of management can be designed and the number of staff in each department fixed.

It is extremely important in designing the structure of industrial management bodies to settle the question of the chain of command in the different sections of production. Work on designing management bodies can be done most effectively by specialist organisations. Concrete methods of work are tested in practice at a number of enterprises in different branches of industry.

Enterprise management must be operational. This means a close link between managerial bodies and production, and an active influence on the work of each enterprise and production section with a view to creating the right conditions for their effective work. Management bodies should be close to production, should know its needs well, and should give the necessary help fast.

The strengthening of state and labour discipline is an indispensable condition for the successful work of industry.

5. THE CONSISTENCY OF MANAGEMENT METHODS

Educational, economic and organisational methods of management have been examined above. In practice these methods are interconnected and form an organic entity. The development of socialist emulation is closely connected with and relies on methods of using economic and material incentives. Many of the provisions regarding economic, material and moral incentives are strengthened by organisational and administrative acts. In practice, moral and material incentives are combined in a complex manner. The incentives system cannot be sufficient unless backed up by a system of sanctions.

Organisational management methods are a vital prerequisite and condition for effectively implementing educational and economic methods and should in no way be confused with administrative and coercive methods which prompt workers to act only on orders from adove, without using their own initiative, which is alien in principle to the socialist system of management. Every manager should be guided by the demands made on management by Lenin when he counselled them "to issue fewer orders, rather to refrain from issuing any at all, and to be very tactful in their dealings with the scientists and technicians.... The task is to learn from them and to help them to broaden their world-view on the basis of achievements in their particular field...."* Lenin was deeply convinced that it is impossible for someone "to manage without being competent, to manage without full knowledge, without knowledge of the science of management...."**

Management should be founded on a rational combination of persuasion and coercion. Educational methods have acquired exceptionally great importance in managing the economy. A thorough understanding by each worker of the tasks confronting him helps develop personal initiative and interest and is a powerful motive force in production.

The use of educational methods in enterprise management entails explaining to all workers the content and direction of state plans and enterprise development plans and the tasks facing their particular section of production. Every worker should have a clear understanding of his own role in the general development of production and should organise his work in such a way as to help in tackling the overall tasks.

Training workers in advanced production experience is a serious element in educational work. Enterprise and production shop managers try to ensure that every worker wants, as a matter of course, to make use of advanced experience and to work at a level achieved in the best sections of the enterprise. Enterprise workers are the collective owners of the means of production and are directly interested in the maximum development of socialist production.

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* V. I. Lenin, *Collected Works*, Vol. 32, p. 144.

** Ibid., Vol. 36, p. 521.

Under socialism all necessary conditions exist for using workers in accordance with their skills, abilities and aptitudes. Work is carried out on an extensive scale to train and raise the qualifications of workers. In view of the need to raise workers' living standards still more and to this end increase the efficiency of social production in conditions of large-scale production, a colossally vast range of output, fast technological progress, and the availability of highly-qualified managers and well-integrated production teams of workers at enterprises, it has become both necessary and possible to make more extensive use of economic methods of management. It is precisely these methods which combine most fully the interests of society with the interests of each group of production workers and each individual worker. Such methods ensure that different production teams, whose interests are made to correspond to those of developing socialist production as a whole, work in an integrated way.

All these different management methods are directed towards creating the most suitable conditions for achieving the best results at least cost in the interests of society. The Directives of the 24th Congress of the CPSU for the Ninth Five-Year Economic Development Plan for 1971-75 state that the system and methods of management and planning should be improved above all so as to ensure the all-round intensification of social production and improve its efficiency which is the main line of economic development for the country both over the next few years and in the long term and is a vital condition for establishing the material and technological base for communism.

6. THE ESSENTIAL FEATURES OF COST ACCOUNTING

Cost accounting is a key method for managing the economy which relies on economic, organisational and educational means and helps increase production efficiency.

This method is based on measuring costs in monetary terms against the results of production activity and on financing enterprise expenditure from income and ensuring the profitability of production. Cost accounting ensures that organisations as a whole have an economic interest in producing goods and meet their responsibilities and that individual workers have a material interest and shoulder their responsibilities in improving the economic running of industry. It helps teach workers to adopt a thrifty and public-spirited approach to using national resources.

As a method of planned management, cost accounting entails enacting a series of economic measures for promoting the development of each and every enterprise on the basis of a systematic improvement in the technology and organisation of production and for ensuring that all the plan indicators are implemented. These measures include: prices of goods and the profits set by them; credit given to enterprises for various purposes; a system of financing enterprises; the economic interest and responsibility of enterprises in carrying through commitments they have entered into under various agreements; and the provision of material incentives for workers.

The Ninth Five-Year Plan Directives have set the following task: "Cost accounting shall play a bigger part in the activity of research and designing organisations so as to raise the efficiency of research and development work and accelerate the introduction of scientific achievements in production."*

Cost accounting entails fixing plan assignments for a whole range of inducators concerning the efficiency of operations which enables a check to be made on plan implementation for each section of production. Organisations operating on cost-accounting basis receive the funds they need for their work from the state and are answerable for the use they make of them. Their expenditure should be met from their income. They make an equivalent exchange with their suppliers and customers in connection with the commitments they have respectively entered into. Cost accounting is an element in the planned running of the economy, since it is based on the state plan and helps ensure it is implemented in the best way possible. It makes use of commodity-money relationships, provides material incentives to increase production efficiency, and promotes an increase in labour productivity.

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* *24th Congress of the CPSU*, p. 318.

Cost accounting takes account of the fact that all material, technical and monetary resources put at the disposal of a socialist industrial enterprise and other industrial organisations are state property but are attached to a particular enterprise. In this way, lack of a sense of responsibility in the use of production resources is avoided. The enterprise is itself answerable for the results of its operations. Its financial state depends on the success of those operations.

Each enterprise has its own stable financial base. Changes have also occurred in the system whereby an enterprise bears material responsibility for meeting its commitments. Economic means of influencing an enterprise have been strengthened and their interest and responsibility regarding the use of fixed assets have been increased. This has been done by introducing payments on assets and by financing investments at enterprises mainly from their special funds for developing production, made up of deductions from profits, and from repayable loans. Enterprises thereby have a greater interest in improving investment efficiency and shortening the recoupment period. The profit indicator which forms the basis of cost accounting actively reacts to this investment efficiency since construction can only be undertaken if profits are available.

The present system of financing housing and the construction of social and cultural amenities at enterprises and of providing material incentives for their workers helps more than ever to increase the importance of cost accounting and to give a bigger role to profitability as one of the most important criteria for judging an enterprise's operations.

The system of cost accounting as applied in industry comprises three main subsystems: cost accounting for an enterprise as a whole, in its relations with its business partners—suppliers, customers, and research, project-planning, construction and transport organisations; intra-enterprise cost accounting—the relations between production shops and sections within an enterprise; and cost accounting for a branch or subbranch of industry representing a system comprising a branch, subbranch or group of enterprises and including relations between associations and enterprises and relations among associations.

With reference to the cost accounting of a ministry or chief administrative department, what is meant is not cost accounting for the staff but for the whole economic system subordinate to it.

Cost accounting at enterprises represents an economic relationship of independent organisations, a system for their economic relations. It is based on the fact that they have fixed and circulating assets attached to them for their own use, that they have an interest in expanding the volume of sales and increasing profitability, and that they enjoy the rights of a legal person with all the consequences this entails. The means of production at an enterprise which are state property are at the disposal of this enterprise's work force which has an interest in making the best possible use of them. Cost accounting at an enterprise aims at establishing the economic conditions and motives for increasing profitability, lowering costs, and improving the efficiency with which production assets are used.

The method of financing enterprise activities and setting up incentive funds ensures that the enterprise is interested in meeting its commitments under the production plan fully and in good time.

Cost accounting ensures the smooth flow of production and its profitability. Assets circulate at an enterprise in the following way. After selling its output, an enterprise receives resources which comprise enough to cover the costs of production and obtain a profit. The costs of production, excluding amortisation allowances, are ploughed back into the production process and start on the next phase of circulation. Some of the amortisation allowances (for renovation) are handed over to the state as income to recompense it as owner of the means of production. Some, together with part of the profits, finance a fund for developing production and accrue once more to the enterprise for replenishing its means of production.

Another part of the profits makes up the material incentives fund and the fund for social and cultural measures which form a source for providing the workers with various benefits in addition to their wages.

An enterprise makes payments for the use of assets, pays taxes and hands over deductions from profits to the state budget. If necessary, the state allocates funds from the budget to an enterprise for construction and the replenishing of circulating assets, while the bank grants credits.

Housing, communal and cultural facilities provided by an enterprise depend on the profitability of production, since expenditure on these items is made from the fund for social and cultural measures and housing which is financed from deductions from enterprise profits.

The main indicators for awarding bonuses to managerial workers at enterprises are fulfilment of the plan for sales and an increase in profitability. In this way the staff aquire an interest in being set a taut though realistic plan, since more incentives are given for fulfilling the plan than for overfulfilling it.

Under the cost accounting system each enterprise is responsible for implementing the plan as laid down in a whole series of economic agreements, which include the scale of sanctions to be imposed on the enterprise if it fails to complete the plan for delivering output in time.

In order to strengthen the practice of cost accounting, there must be a special drive for a strict regime of economy and monetary and financial discipline; all indicators of the plan must be fulfilled, within the set time-limits; and a systematic calculation and check should be made on the work of an enterprise and its various departments. If the enterprise has an interest in implementing production plans fully and in good time, then the procedure for financing its activities and setting up incentives funds outlined above will be assured.

Cost accounting for production shops, sections and units inside enterprises differs from that for enterprises as a whole. There is a technical rather than social division of labour inside enterprises.

An increase in production efficiency at an enterprise is closely tied up with the creation of a clear system of work for all levels of production, services, and management. Each industrial enterprise represents an organism which employs a great number of people. Each part of the enterprise makes its own contribution to the overall results of its work. This is achieved by a system of intra-enterprise cost accounting—by the transfer to cost accounting of the main, ancillary and service shops and sections, and certain other economic organisations inside the enterprise (the offices dealing with material and technical equipment supplies, sales, departments, project-planning bodies, etc.).

Intra-enterprise cost accounting entails setting up economic and material incentives for different units and sections inside the enterprise to improve operations throughout the enterprise and increase responsibility for each particular section of work. It is based on the following lines which ensure that cost accounting is practised on the same organisational principles throughout the enterprise:

firstly, production shops are granted independence of action with regard to administrative and production matters concerning the use of production resources within the limits necessary for implementing the plan;

secondly, they are allocated fixed production assets and circulating funds for their own use;

thirdly, they form independent departments of the enterprise with whatever resources they need and their own assignments for delivering semi-finished goods to ancillary shops within the enterprise and for achieving a conventional rate of profit;

fourthly, part of the enterprise's material incentives fund is allocated to production shops for their own (specially regulated) allocation;

fifthly, material incentives are established to encourage production shop workers to achieve plan indicators;

sixthly, the material responsibility of shops for breaching plan, production or financial discipline and measures for making good any losses inflicted on other shops and offices within the enterprise are laid down.

Many of the tasks connected with the reconstruction and re-equipment of enterprises, the carrying-out and financing of research, the training of key personnel, the mastering of new output, etc., cannot be tackled by the efforts of a single enterprise. This makes it necessary to introduce economic accounting for whole branches and subbranches of industry.

Cost accounting for a branch or subbranch of industry primarily entails setting up a financial system for the whole branch, that is, establishing a statutory association fund, most of which remains at the disposal of the association's management body as a whole and which is used for performing certain functions of a general economic nature, and setting up a system of economic and material incentives and establishing branch responsibility for implementing state plans and any commitments entered into. For this purpose an overall association balance-sheet is being set up, and a system of general agreements between associations for doing work common to that subbranch is being introduced. In addition, associations undertake to carry out basic strategic tasks regarding the management of technical and economic development, to conduct fundamental research of interest to that branch of industry, and to organise external economic relations.

Work on these long-term tasks is concentrated at the top levels of industrial management which have the necessary resources and are freed from much of the work connected with current operational management at enterprises, in so far as the latter's powers have been considerably extended.

Relations among industrial enterprises belonging to an association and between industrial enterprises on the one hand and research, project-planning, ancillary and service organisations on the other are based on principles of full cost accounting with all the consequences arising out of normal contractual relations. The association management for its part has the following central funds at its disposal:

1. The *research fund* constitutes a certain percentage of the prime costs of factory production laid down for the particular branch of industry. Total deductions made on this account are included by enterprises in their extra-production expenditures and are transferred to the association.

The association management draws up an aggregate plan of research work which is financed from this fund. Part of the monies are used for financing the association's research organisations; part are used for paying for work done by other organisations on the orders of the association or particular enterprises; part of them are used for carrying on work in laboratories and other organisations attached to particular enterprises. Funds are allocated among enterprises regardless of the contributions they have made to the fund. In this way, an association is able to concentrate funds on doing research on a larger scale than any one enterprise and can deploy them better.

2. The *fund for mastering new output* is established and used in exactly the same way as the research fund.

3. The *fund for training personnel* is operated in exactly the same way as the above two funds.

4. A *fund for developing production* is set up at each enterprise. All the same, measures to develop production which are beyond the possibilities of individual enterprises are undertaken within the association system. They include developing centralised ancillary and service industries, establishing and improving the work of components manufacturers supplying a number of enterprises belonging to an association, etc. Moreover, it may become necessary to carry out work at particular enterprises which cannot be financed by this fund and for which it is difficult to obtain bank credits. Such work includes measures to improve working conditions, safety techniques, etc. In view of the need to finance work of this nature, it has proved a good idea to set up a fund for developing production within the association financed from deductions from similar enterprise funds. The scale of contributions is decided with regard to the particular features of the industry.

5. The *centralised fund for financing circulating assets* which consists of deductions from enterprise circulating assets is used for temporarily replenishing circulating assets at individual enterprises in the event of them encountering any difficulties for which they are not responsible. It can also be used as a source of funds from which an association can make good any losses suffered by enterprises due to mistakes in planning or other lapses by higher-level organisations.

Despite the fact that the system whereby enterprises have their own source of necessary funds is well developed, it is often difficult to get by without centralised capital investments. An industry's long-term technological policy is put into effect on the basis of centralised investments.

When an industrial association in a particular branch of industry changes into a single organisational and economic complex, changes also occur in its relations with the ministry.

In its relations with the ministry, an association acts as a single representative of the entire complex of enterprises belonging to it. All the resources needed for implementing a plan are allocated to the association as a whole, while the report on plan fulfilment is handed over to the ministry in aggregate form. The following matters lie within the competence of an association:

with regard to investments and construction, it has the right to distribute the centralised investments it has been allocated among enterprises without, however, making any change in the use for which they were originally intended; it has the right to confirm itemised lists and draft estimates for new construction within the limits of the appropriations it has received;

with regard to the organisation of production, it has the right to divide up the range of output between different enterprises within the limits set by plan assignments for production; to carry out measures regarding the specialisation of enterprises, changing it, if necessary; to transfer plans for the production of goods in which it does not specialise to enterprises belonging to other associations and use the production capacity thus released for producing its own basic range of goods; and to take over plans for the production of goods in which it specialises from other associations;

with regard to employment and wages, it has the right to make independent decisions regarding the structure and size of management and the estimates of administrative and managerial expenditures within the limits of the total wage bill for the association.

In this way a finely-balanced system of cost accounting is established in industry which covers its most important sections and ensures that production assets are used efficiently.

7. THE CONTROL AND ANALYSIS OF ACTIVITIES IN DIFFERENT SECTIONS OF INDUSTRY

All aspects of the work done by a production work force are subject to systematic control and analysis. Control of the overall operational results in each section of industry is exercised through the system of cost accounting, while control over the state of production resources, their level of maintenance and their use is exercised through the accounting system.

Every manager should know what is going on in the section he manages and in other sections connected with his own, should understand the trends occurring in processes taking place in them, and should know how to give the proper direction to them. As already noted, the information system plays an important role here.

However, it is important for management purposes not only to be in receipt of information, but also to make a thorough analysis of the data obtained.

Economic analysis is consequently an important means for managing the economy. It is used in long-term planning and forecasting, taking into account past trends in economic development. It enables an objective evaluation to be made of the work done, since it enables an explanation to be found not only of the outcome of work but also of the reasons for any disruptions.

In present-day conditions economic analysis should describe the qualitative changes taking place at enterprises or in some other section of industry and express them in quantitative terms. The main task of economic analysis is to decide the technological, organisational and economic level of work at an enterprise and in its different sections; to compare these levels with those in other Soviet and foreign enterprises of similar type; to ascertain the factors behind these differences and the possibilities of eliminating any backwardness or losses that may exist, and to make use of advanced experience in order to achieve an overall increase in production efficiency.

Economic analysis is one of the means by which it is possible to gain an understanding of the development trends of the units being managed and to determine the economic outcome of the production work force's efforts. Both the quantitative and qualitative aspects of economic processes form the subject for economic analysis. These processes are studied through the complex use of accounting and reporting data, special total and selective surveys, personal observation and the accumulated experience of production work forces.

A goal-directed approach is adopted in the analysis of production. In every single case, even when a regular monthly or quarterly analysis is being made, a particular theme is selected which presents the greatest interest in that particular situation. Thus, as regards the design of goods, those whose technical level lags far behind or those which are recommended for improvement are subjected to analysis as a matter of priority.

Part of the analysis is devoted to establishing how successfully the system being managed corresponds to the prevailing conditions of production.

The analysis should be conducted in a completely objective manner, in the course of which the objective facts and figures should be the determining factor and should not in any way be fitted in to suit any preconceptions. Analysis is necessary in order to search out ways of improving efficiency and select the best managerial solutions. It is in essence a matter of trial and error and the people making the analysis take into account those tasks which confront the unit being analysed.

Economic analysis takes a systems approach, that is, it evaluates the work of every single section of production from the point of view of the effect it has on the overall operational results of industry as a whole. Systems analysis also entails studying the flow and outcome of work in each section in the light of the aim it has been set. In many instances a diagnostic analysis is made which finds out the reasons for any dislocation of the normal course of production or its inadequate efficiency. This enables the causes preventing normal work to be removed and the work of the unit to be improved.

The organisation of analytical work is closely bound up with the entire system of managing enterprise activity. Production shop heads and foremen analyse the results of work done in sections under them in order to raise its level in future. People working in design, technological and other departments in technical management at an enterprise investigate the technological attributes of output, study complaints and tests of goods, analyse the technological process of their manufacture and then draw up measures to improve the quality of output. The dispatch department analyses factors disrupting the normal course of production and takes measures to ensure its smooth flow and the smooth functioning of all sections in the enterprise. The financial department staff study the movement and use of monetary resources. Those working in the supply and sales offices investigate the efficiency of methods used in the delivery of materials and the sale of output, analyse costs of circulation, seeking out ways of cutting them, and turn up possible ways of reducing stocks of materials without harming production. Economists are concerned with analysing overall operational results of enterprises and their various departments. They assess the efficiency of production and the factors determining it, the economic aspects of technical and organisational solutions, and help find optimal solutions.

All this means in fact that the work of analysis is done not just by economic analysts but by everyone employed in no matter what sphere of management of the economy, whether he is an enterprise director, a production shop head, a foreman, a designer, a technologist, etc. In view of the fact that all scientific, technical and production-line workers take an active part in the management of production, it may be taken for granted that all workers, engineers technicians and office workers employed at enterprises and in management bodies take an active part in the work of analysis. The economist's task is to organise and direct their activity.

The forms and methods of economic analysis are very varied. They depend to a great extent on the aims of analysis and on the character of the section being analysed. Thus, an analysis undertaken with a view to preparing materials for perspective planning must concentrate on establishing the general stable regularities underlying development of the unit being managed and must abstract from particular partial phenomena. An attempt is made in the course of such analysis to force the series of values being analysed from random deviations due to some infringement of the normal course of work.

In conducting an analysis for the purpose of disclosing current reserves, particular attention is focussed on discovering the reason for losses and bringing to light advanced experience. In this case it is not permissible to abstract from particular shortcomings. Here the centre of attention is concentrated not on ascertaining general regularities and tendencies, but on disaggregating overall results in time and space in order to determine latent production facilities and ways of using them.

The particular features of production decide which system of indicators should be used in analysis. They affect the choice of those enterprise sections on which the analyst concentrates his attention.

Specialists working in the field of economic analysis have to establish and take account of these particular features as one of their tasks. If they tackle it successfully, the efficiency of analysis and the use made of it in managing the economy are improved.

Economic analysis can be carried out at enterprises in the form of periodic surveys of the results of enterprises, production shops and sections which enables them to be given an objective evaluation of their work, to fix the position of each one of them in socialist emulation, and to draw up proposals regarding the provision of material incentives for workers in different production and service sections.

Economic analysis is also divided up into themes, according to the various aspects of enterprise activity—quality of output, use of materials, labour productivity, etc. With regard to these matters it helps provide a thorough examination of various questions and prepare data necessary for its effective solution.

A system of making local analyses of different sections of production and services is also applied with a view to ascertaining their advanced experience and their latent production facilities.

All these forms of analysis observe certain regularities, are properly combined one with another, and help raise the efficiency of production and improve the management of the economy.

The efficiency of analysis depends to a considerable extent on the methods used in analytical work. Economic analysis should not only assess the influence of various factors on the operational results of different sections of industry but should also produce a quantitative estimate of the extent of this influence. This is what makes it necessary to work out and apply mathematical methods of analysis, in particular, simple and multiple correlation, factorial and input-output analysis, etc. A quantitative estimate of reserves and of the effect of different factors on their use lays the basis for drawing up plans and, in particular, plans for the development of technology and for improving the organisation of production.

The use of economic analysis in management makes a number of new demands on the system. They include first of all improving the operational efficiency of information and analysis.

Once the whole system of analysis has become one of the most important means of management, it becomes possible to determine the efficiency with which all types of production resources are used much more thoroughly. In order to do this successfully, analysts should have in mind all types of available resources, and all sections of production where the use of resources is decided should become the subject of their analysis.

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